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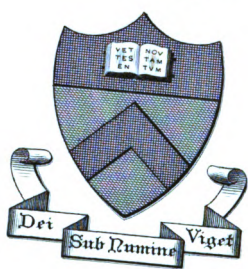
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MANUFACTURED AND SOLD BY
S. B. BOWLES,
12 GOLD STREET,

Between Platt Street and Maiden Lane,

NEW YORK.

NEW YORK:

BOWNE & CO., STEAM PRINTERS AND STATIONERS,
150 PEARL STREET, NEAR WALL STREET.

1859.

INTRODUCTORY NOTICE.

THE Proprietor of the New York Railroad Supply Store having had a *practical experience of ten years* in the manufacture and use of Steam Engines, Machinery, and general Railroad Materials, and having conducted the above business four years, feels justified in saying he can furnish Railroad Companies and manufacturers unusually favorable facilities for obtaining their supplies.

While I would tender my grateful acknowledgment for the liberal appreciation of my efforts since my commencement, I would respectfully solicit a continuance, trusting to merit the general satisfaction which has been accorded to me.

S. B. BOWLES.

Entered, according to act of Congress, in the year one thousand eight hundred and fifty-nine, by

S. B. BOWLES,

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CONTENTS.

ENGINEERING DEPARTMENT.

	PAGE.
Plain Compass.....	9
Vernier "	10
" Transit.....	11
Pocket and Rail Road Compass.....	12
Surveyors' Transit.....	13
Solar Compass, Tripods.....	14
Solar Telescope Compass.....	15
Engineers' Transit.....	16
Y Level, 20 inch Telescope.....	22
" " 16 " "	27
Leveling Rods.....	34
Tripods.....	36
Chains.....	37
Marking Pins, Tape Measures, Steel Chains.....	38
Price List of Engineering and Surveying Instruments....	39
Information to Purchasers.....	42
Drawing Instruments, French and German.....	45
Bow Pens and Pencils, Spacing Dividers and Drawing Pens.....	47
Squares, Protractors, &c.....	48
Cases of Drawing Instruments.....	50

(RECAP)

107642

ANNEX

	PAGE.
German Silver Swiss Drawing Instruments.....	53
Drawing Paper, Colors, &c.....	57
List of Books on Engineering, &c.....	60

MACHINERY DEPARTMENT.

Stationary Engines.....	61
Portable “ 	63
Prices for Stationary and Portable Engines.....	65
Tom Thumb Punch, Fairman's Scroll Chuck, Horton's Screw Chuck.....	66
Portable Rail Punch.....	67
Fairbank's Scales.....	68
Pile Drivers, Williston's Rail Straightener, Seller's and Ward's Turn Tables	69
Jack's, Dudgeon's, Ball's and William's.....	70
“ Burrough's.....	71
Blasting Materials, Emery, Emery Cloth and Paper, Sand Paper, Borax, Cotton Waste, Pick and Axe Handles, Blocks, Crow and Spike Bars, Letters, Nails, Shovels, Axes	72
Portable Circular Saw Mills, Boiler Felting, Boiler In- crustation Eradicator, Fan Blowers—(Alden's and Ma- son's).....	73
Rail Road Chair, Bishop's.....	74
Ratchet Drill, Packer's.....	75
“ “ White's and others.....	77

	PAGE.
Belting, India Rubber, Gutta Percha, and Leather.....	78
Pump, West's Lift and Force.....	79
" Holly's Elliptical Rotary.....	80
" " Power.....	81
Price List for Holly's Pumps.....	82
Hydraulic Rams, Wooden Pump Tubing, Drain Pipes, Wycoff's Boring Machine.....	83
Pump, Palmer's Rotary Hydraulic.....	84
Eagle Moulding Machine.....	85
Wood Planers, Stover's.....	88
" " Woodworth's.....	90
Saws, Circular, &c.....	91
Mandrels for Saws.....	92
Planing Machines for Iron.....	93
Engine Lathes.....	94
Hand Lathes, Upright Drills, &c.....	96
Wrenches, Phillip's Gripping.....	97
" Coe's and Taft's.....	98
Forge and Bellows, (Queen's Portable), Anvils, Sledges, Sledge Handles, Vices.....	99
Foundry Materials, Fire Brick, Rosendale Cement.....	100
White Metal.....	101
Metals, Cast and Spring Steel, Frog Points and Plates, Boiler and Tank Iron, Sheet Iron and Sheet Brass, Old Metals.....	102
Damascus Steel.....	103
Files.....	104

CAR DEPARTMENT.

	PAGE.
Wheels, Moore's.....	106
" Whitney's, Washburn, Richardson, Barnum & Co., and Bush & Lobdell's. Boring and Fitting Wheels, Axles, Screw Press.....	107
Glass, Tin for Roofing, Baggage Barrows, Brake Chain, Draw Bars, Springs.....	108
Bailey's Adjustable Car Seat.....	109
Safford's Window Sash Adjuster.....	110
Screw Brass Capped Gimlet Pointed.....	112
" Iron.....	113
Hand Stamps, Seal Presses, Conducotrs' Punches and Badges.....	114
Baggage Checks.....	115
Oil, Wood and Coal Checks.....	123
Pallets, Steel Alphabet and Figures, Stencil Plates, Brands	125
Painting Materials.....	126
Bolts.....	129
Nuts.....	130
Washers, Coach or Lag Screws, set Screws, Bridge Bolts, Bolt Ends, Tank Rivets.....	131
Locks, Switch and Car.....	132
Lanterns.....	133
Lantern, Rail Road Station.....	136
" Tri-Color Signal, Square Signal, Bridge Signals, Lanterns Engraved, and Lantern Globes.....	137
Car Lamps, Moller's, Car Lamp Chimneys.....	138

	PAGE.
Gas Generating Lamp	139
Car Lamps, Candlestick Lantern	141
Window Lifts and Buttons, Seat Hooks, Pivots, Rivets, Hat Hooks and Racks, Screw Eyes for Hat Cord, Hat Cord, Seat Arms, Head Lining Nails, Plush Tuft Buttons and Nails, Enameled Tuft Buttons and Nails, Bell Cord and Thimbles	142
Screw Eyes and Sculpt, Bell Cord Coupling Hooks and Connections, Car Door Locks and Knobs, Lamp Canop- ies, Tassels, Watch Lighters, Brass Butts, Safford's Window Sash Adjuster, Window Catches	143
Car Window Catches, Blind Bolts and Springs, Cotton Duck, Head Linings, Floor Oil Cloth and Matting, En- ameled Cloth, Burlaps, Buckram, Cotton Felting, Tacks, Curled Hair, Seat Webbing, Letters for Patterns and Cars, Mahogany and other wood, Veneers, Looking Glasses, Water Coolers, Dust and Scrubbing Brushes ..	144
Ventilator, Ventilator Rings, Bitts, Hair Cloth, Carpets, Plushes, Tufting Twine, Thread, Notice Plates	145
Express Messenger's Safes, Car Gas Apparatus, Iron Cars, Creamer's Brake Operator, Hotchkiss' Car Brake, Hop- kin's and England's Car Coupling, Hoppers for Water Closet	146

TELEGRAPH DEPARTMENT.

Morse's Recording Register and Receiving Magnet	147
Morse's Manipulating Key, Telegraph Instrument Wire, and Telegraph Wire	148

	PAGE.
Chester's Telegraph Battery.....	149
Chester's Local Battery, Daniel's, Smees, and Groves' Battery, Battery Material, Paper Reel, &c.....	150

LOCOMOTIVE DEPARTMENT.

Ashcroft's Steam Guage.....	151
Hearson's Steam and Water Guages.....	152
Schmidt's, Allen's, and Kayser & Hoffman's Steam Guages.....	153
Tires, Moore's Chilled, Low-moor, Bowling, Ames and Farnley's	154
Head Lights, Kelly's, Head Light Chimneys, Chamois Skins, Polishing Powder, Head Light Glasses.....	155
Head Lights, Porter's and William's.....	156
" Improved, and Radley & Hunter's.....	157
Clocks.....	158
Watch Clocks.....	159
Hose, Rubber and Hemp.....	160
Salter's Balances, Boiler Flues and Iron, Spark Arresters, Wire Netting.....	161
Packing Yarn, Gum Packing, Fire Buckets, Bunting, Torpedoes, Locomotive Name Plates.....	162
Oil Cups, Cistern Pumps, Guage and Cylinder Cocks, Steam Whistles, Railing Balls.....	163
Locomotive and Depot Bells.....	164
Sheet Brass Work, Richardson's Oil Cups, Oil Cans....	165

Engineering Department.

SURVEYING INSTRUMENTS.

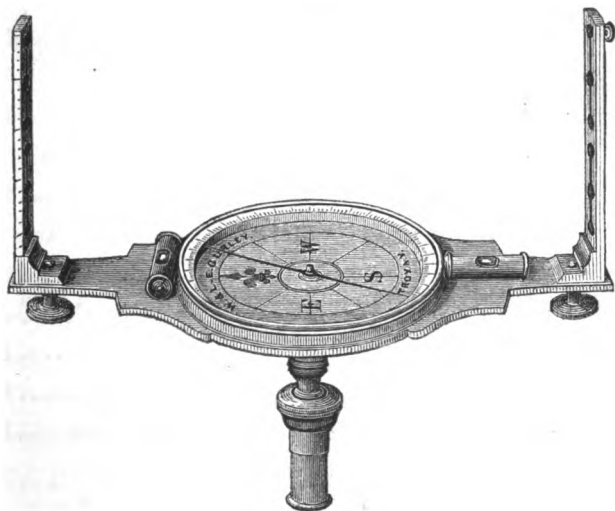
THE various instruments used in Surveying may be conveniently arranged, in two general divisions.

(1.) **NEEDLE** instruments,—or such as owe their accuracy and value to the magnetic needle only, embracing the Plain and Vernier Compasses, and the Vernier Transit.

(2.) **ANGULAR** instruments, including those in which the horizontal angles, are measured by a divided circle and verniers, as well as by the needle also; as the Rail Road Compass, the Surveyors and Engineer's Transits, &c. First, the

PLAIN COMPASS.

Fig. 1.



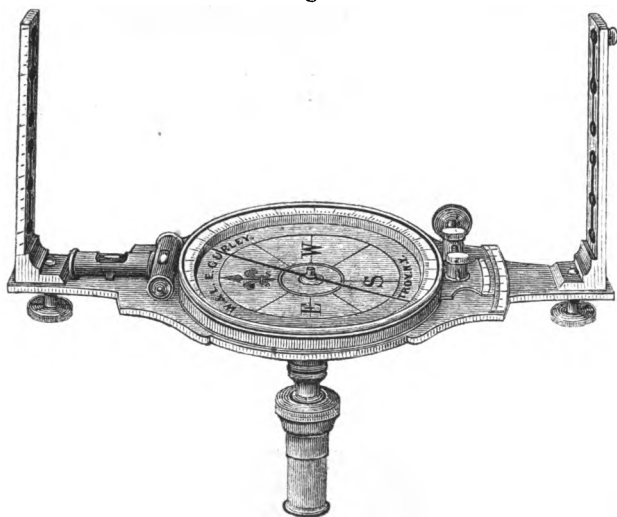
As represented above, the Plain Compass, has, a needle six

inches long, a graduated circle, main plate, levels, and sights, and is placed upon the brass head of the "Jacob staff."

THE JACOB STAFF mountings, which are furnished with all our compasses, and packed in the same case, consist of the brass head and an iron ferule or shoe pointed with steel so as to be set firmly in the ground.

THE VERNIER COMPASS.

Fig. 2.

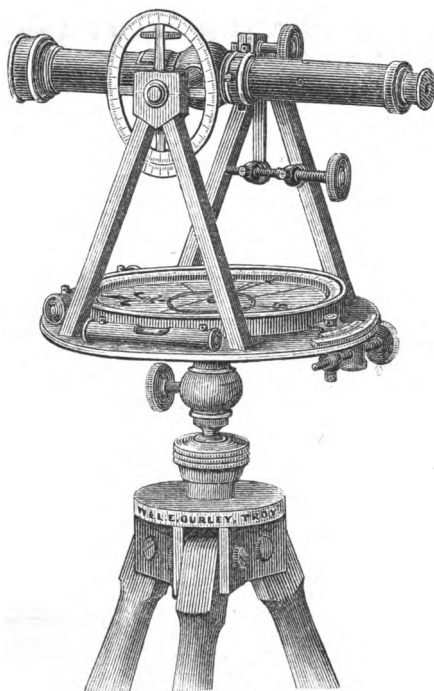


The Vernier Compass, represented in fig. 2, differs from the instrument just described, in having its compass circle with a vernier attached, moveable about a common centre, by turning the "tangent screw," seen at the south end of the plate.

The superiority of the Vernier over the Plain Compass consists in its adaptation to the retracing the lines of an old survey, and to the surveys of the U. S. public lands, where the lines are based on a true meridian.

THE VERNIER TRANSIT.

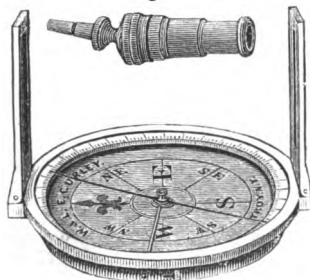
Fig. 3.



The Vernier Transit, or Transit Compass, represented in the cut above, has the same general properties as the Vernier Compass, but is furnished with a telescope in place of the ordinary sights.

THE POCKET COMPASS.

Fig. 4.

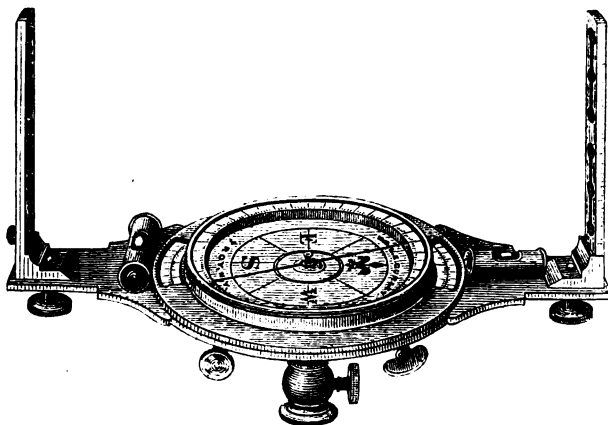


This little instrument, shown with Jacob staff socket, though not used in extensive surveys, is found very convenient in making explorations, or in retracing the lines of government surveys, as in locating land warrants, &c.

The sights are made with a slote and a hair, on opposite sides; they also have joints near the base, so as to fold over each other above the glass, when the compass is packed in its case.

THE RAIL ROAD COMPASS.

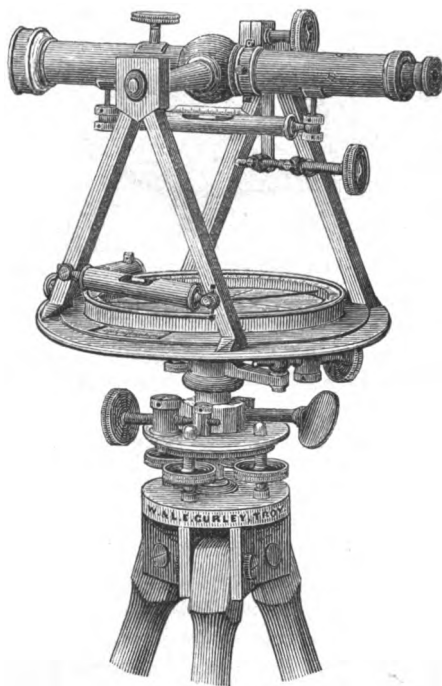
Fig. 5.



As shown in fig. 5, this instrument has the main plate, levels, sights, and needle of the ordinary instrument, but is also provided with a circle on the outside of the compass box, divided all around, and reading by two opposite verniers, to single minutes of a degree.

THE SURVEYORS' TRANSIT.

Fig. 6.



The Surveyors' Transit, which is shown above, is in principle very similar to the instrument just described, differing from it mainly in the substitution of the telescope with its appendages, for the ordinary compass sights.

THE SOLAR COMPASS.

Fig. 7.

This instrument, so ingeniously contrived for readily determining a true meridian or north and south line, was invented 1836.

It has since come into general use in the surveys of U.S. public lands, the principal lines of which are required to be run with reference to the true meridian.

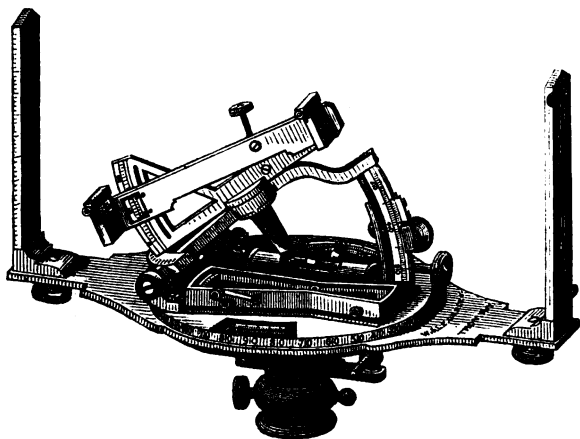
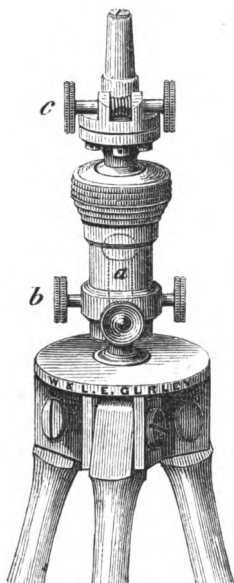


Fig. 8.

**TRIPODS.**

The Solar Compass should always be used on a tripod provided with some means by which it may be leveled with ease and accuracy.

A tangent motion to the whole instrument about its spindle, in addition to that of the limb already spoken of, is also of very great value.

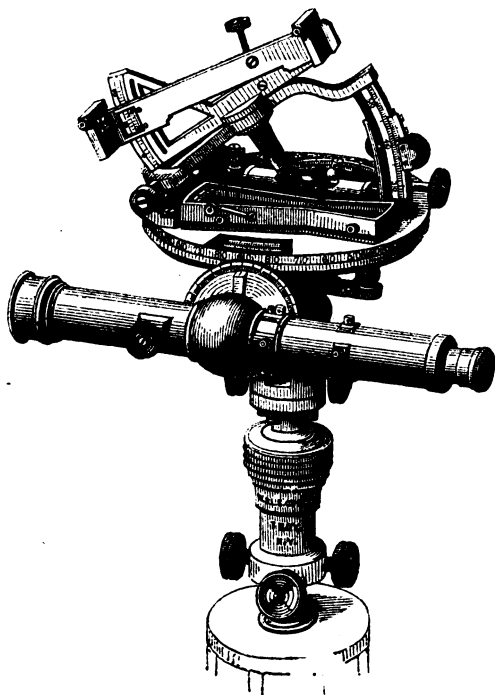
These requirements are, we think, best supplied in our Adjusting Socket, with compound tangent ball as shown in Fig. 8.

The socket is attached to the legs of an ordinary compass tripod, and rests upon the knob, *a*, of an interior stem, shown by the dotted line of the cut.

The instrument is approximately leveled by the ball and socket joint, and finally made perfectly horizontal by the levelling screws at *b*.

THE SOLAR TELESCOPE COMPASS.

Fig. 9.



In this, the second form of our improved Solar Compass, the solar apparatus and the arrangement of the socket, &c., is precisely like that of the instrument just described.

The main or lower plate, however, is now made circular the sights being dispensed with, and a telescope substituted in their stead.

ENGINEERS' INSTRUMENTS.

THE ENGINEERS' TRANSIT.

Fig. 10.



Having described the various instruments employed in surveying, we shall consider in detail those whose use belongs more especially to the practice of the civil engineer, and of these the first in importance is that termed the Engineers' Transit.

It differs from the instrument just described in having the compass circle, verniers, and standards, attached to the same plate, and moving together above the divided circle or limb.

The engraving fig. 10 will convey a good idea of our latest improved Engineers' Transit, and to this the reader will please refer in the following detailed description of its different parts.

THE TELESCOPE is from twelve to thirteen inches long, and is of the finest quality.

Like all those of our own instruments, it is capable of reversion only at the object end, though we have often, when desired, made the other or even both ends to reverse.

The rack and pinion movement of the object-glass is usually placed, as shown, on the top of the telescope tube, though sometimes on the side, as the engineer may prefer.

PINION TO EYE-GLASS.—We have often adapted to the eyepiece of this and our other Transits, a rack and pinion movement which is placed on the side of the tube, and is very excellent in bringing the cross-wires precisely into focus.

THE SHADE.—A short piece of thin tube called the shade, is always made to accompany this and the previous instrument, and is used to protect the object-glass from the glare of the sun, or from moisture ; it must be removed whenever the telescope is reversed, unless the telescope is made to reverse at the eye-end, as is sometimes desired.

On one of the standards will be seen the little moveable box with the capstan head screw underneath, by which the cross-wires are adjusted to trace a vertical line.

THE LIMB or divided circle is seven inches in diameter, graduated to half degrees, and read by two opposite verniers to single minutes.

THE VERNIERS are double, reading both ways from the centre, and are placed on the sides of the plate at right angles to the telescope.

THE NEEDLE is five inches long, and is raised by a milled screw head shown in the cut, placed above the plate.

THE CLAMP AND TANGENT SCREWS are also above, so as to be very accessible, and out of the reach of ordinary accidents. The clamping of the limb is effected in the interior, the aperture being covered with a washer to exclude the dust and moisture.

THE LEVELS, as shown in the cut, are above ; they are both adjustable with the ordinary steel pin.

The glass vials used in the levels of this and the Surveyors' Transit, are ground on their upper interior surface, so that the bubble moves very evenly and with great sensitiveness.

THE TRIPOD HEAD of this instrument is made considerably heavier than that of the Surveyors' Transit.

The upper plate is about five inches diameter, made thick and of well hammered brass ; into this are screwed the long nuts or sockets for the leveling screws, and on the upper surface is seen the clamp, with the two butting tangent screws.

With these the movement is made very slowly, and much more firmly than is possible with a single tangent screw.

The leveling screws are of bell metal, and have a broad three milled head ; they rest on the lower plate, in the little cups spoken of in our account of the previous instrument.

In the engraving it will be seen that the screws are entirely covered above the plate, by little brass caps which protect the threads from dust and corrosion.

The loop for the plumb-bob is connected by a screw to the spindle of the vernier plate, so that it is always suspended from the exact centre of the instrument.

The Attachments of the Transit.

The cut, fig. 10, shows the vertical circle of four and a half inches diameter, which is read by a double vernier to minutes, and also the clamp and tangent movement to the axis of the telescope.

These, with the addition of a level on the telescope, are often used with this instrument, though the majority of engineers prefer an instrument with "plain telescope," like that shown on page 16.

Micrometer.

It is sometimes very convenient in the use of both the Transit and Leveling Instrument, to employ some simple method of ascertaining the distances of objects without resorting to actual measurements.

The two small screws which adjust the movable wire, are placed on opposite sides of the telescope, and to one side of the ordinary cross-wire screws, precisely as shown in fig. 9, and the wire is moved by alternately loosening one and tightening the other, until the two horizontal wires are made to cover the interval desired.

The micrometer wire is furnished, whenever desired, with any of our Transits, and without additional charge.

THE NEEDLE is of service principally as a rough check upon the readings of the verniers in the measurement of horizontal angles, any glaring mistake being detected, by noticing the angles indicated by both, in the different positions of the telescope.

It may also be used as in the compass, to give the direction in which the lines are run, but its employment is only subsidiary to the general purposes of the Transit.

Sizes of the Engineer's Transit.

THE FIVE INCH TRANSIT just described, which, exclusive of the tripod legs, weighs about $13\frac{1}{2}$ lbs., and the

FOUR INCH TRANSIT, precisely similar in style, but about one-fourth smaller, and lighter in all its parts.

It has a telescope of about ten inches long, a four inch needle, and a divided limb of six inches diameter.

Weight of the Attachments.

As it may sometimes be desirable to know the weights of the different extras or attachments, often used in this and the other Transits previously described, we here add them in detail :

Ground level tube, with vial complete,..... $7\frac{1}{2}$ oz.

Vertical circle, with vernier.....6 oz.

Clamp and tangent to axis,.....4 oz.

Besides the simple form of the Engineers' Transit, we also make important modifications, which may be desired by the engineer.

THE LEVELING INSTRUMENT.

OF the different varieties of the Leveling Instrument, that termed the Y Level, has been almost universally preferred by American engineers, on account of the facility of its adjustment, and superior accuracy.

Of these Levels we are selling four different sizes, having telescopes of sixteen, eighteen, twenty, and twenty-two inches long, respectively.

The cut on the following page represents a twenty inch Level, that of the sixteen inch telescope will be shown beyond.

THE TELESCOPE has at each end a ring of bell-metal, turned very truly and both of exactly the same diameter; by these it revolves in the wyes, or can be at pleasure clamped in any position when the clips of the wyes are brought down upon the rings, by pushing in the tapering pins.

The telescope has a rack and pinioned movement to both object and eye-glasses, an adjustment for centering the eye-piece, and another for ensuring the accurate projection of the object-glass, in a straight line.

Both of these are completely concealed from observation and disturbance, by a thin ring which slides over them.

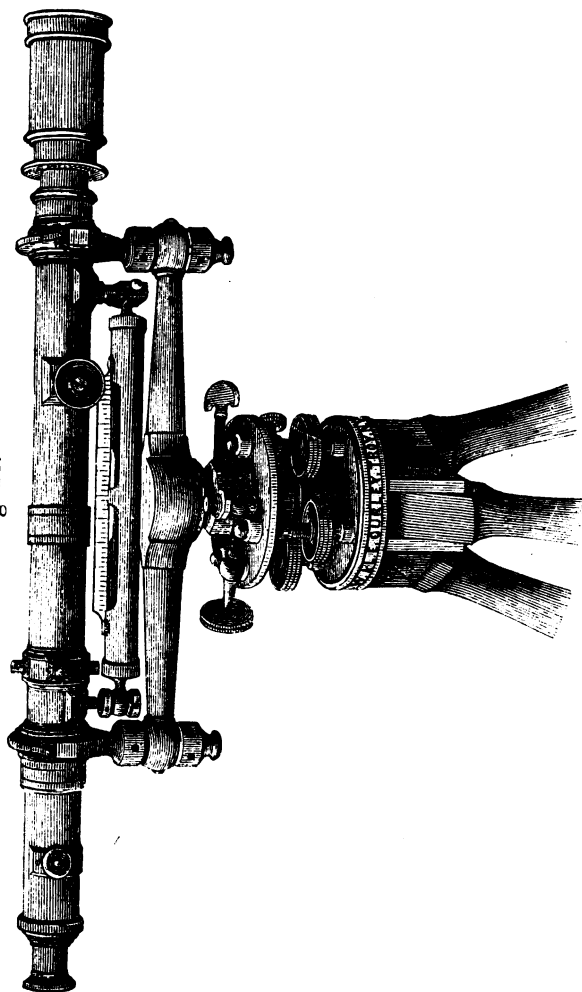
The telescope has also a shade over the object-glass, so made, that whilst it may be readily moved on its slide over the glass, it cannot be dropped off and lost.

The shade of our sixteen inch level, is made to take off, like that of the Engineer's Transit.

THE Y LEVEL.

TWENTY INCH TELESCOPE.

Fig. 11.



The interior construction of the telescope is peculiar to this instrument, and is always made by the maker so permanently, as to need no further attention at the hands of the engineer.

The necessity for such an adjustment will appear, when we state, that it is almost impossible to make a telescope tube, so that it shall be perfectly straight on its interior surface.

Such being the case, it is evident that the object-glass slide which is fitted to this surface, and moves in it, must partake of its irregularity, so that the glass and the line of collimation depending upon it, though adjusted in one position of the slide, will be thrown out when the slide is moved to a different point.

To prove this, let any level be selected which is constructed in the usual manner, and the line of collimation adjusted upon an object taken as near as the range of the slide will allow; then let another be selected, as distant as may be clearly seen; upon this revolve the wires, and they will almost invariably be found out of adjustment, sometimes to an amount fatal to any confidence in the accuracy of the instrument. The following arrangement to correct this imperfection perfectly accomplished its purpose.

There are two bearings of the object-glass slide, one being in the narrow bell metal ring, which slightly contracts the diameter of the main tube, the other in the small adjustable ring, also of bell metal, suspended by four screws in the middle of the telescope.

Advantage is here taken of the fact, that the rays of light are converged by the object-glass, so that none are obstructed by the contraction of the slide, except those which diverge, and which ought always to be intercepted, and absorbed in the blackened surface of the interior of the slide.

Now, in such a telescope, the perfection of movement of the slide, depends entirely upon its exterior surfaces, at the points of the two bearings.

These surfaces are easily and accurately turned concentric, and parallel with each other, and being fitted to the rings, it only remains necessary to adjust the position of the smaller ring, so that its centre will coincide with that of the optical axis of the object-glass.

When this has been once well done, no further correction will be necessary, unless the telescope should be seriously injured.

The manner in which the adjustment of the object-glass slide is effected, will be considered hereafter.

RACK AND PINION.—Our Level telescopes are usually furnished with the ordinary rack and pinion movement to both object and eye tubes.

The advantages of an eye-piece pinion, are, that the eye-piece can be shifted without danger of disturbing the telescope, and that the wires are more certainly brought into distinct view, so as to avoid effectually any error of observation, arising from what is termed the instrumental parallax.

The position of the pinion on the tube is varied in different instruments according to the choice of the engineer.

In our instruments the object slide pinion is placed on the top of the Transit telescopes, and on the side of those of the Level. The pinion of the eye tube is always placed on the side of the telescope.

THE LEVEL or ground bubble tube is attached to the under side of the telescope, and furnished at the different ends with the usual movements, in both horizontal and vertical directions.

The aperture of the tube, through which the glass vial ap-

pears, is about five and one-fourth inches long, being crossed at the centre by a small rib or bridge, which greatly strengthens the tube.

The level scale which extends over the whole length, is graduated into spaces a little coarser than tenths of an inch, and figured at every fifth division, counting from zero at the centre of the bridge ; the scale is set close to the glass.

The bubble vial is made of thick glass tube, selected so as to have an even bore from end to end, and finally ground on its upper interior surface, that the run of the air bubble may be uniform throughout its whole range.

The sensitiveness of a ground level, is determined best by an instrument called a level tester, having at one end two Y's to hold the tube, and at the other a micrometer wheel divided into hundredths, and attached to the top of a fine threaded screw which raises the end of the tester very gradually.

The number of divisions passed over on the perimeter of the wheel, in carrying the bubble over a tenth of the scale, is the index of the delicacy of the level.

THE WYES of our levels are made large and strong, of the best bell metal, and each have two nuts, both being adjustable with the ordinary steel pin.

The clips are brought down on the rings of the telescope tube by the Y pins, which are made tapering, so as to clamp the rings very firmly.

THE LEVEL BAR is made round, of well hammered brass, and shaped, so as to possess the greatest strength in the parts most subject to sudden strains.

Connected with the level bar is the head of the tripod socket.

THE TRIPOD SOCKET is compound; the interior spindle, upon which the whole instrument is supported, is made of steel, and nicely ground, so as to turn evenly and firmly, in a

hollow cylinder of bell metal; this again, has its exterior surface, fitted and ground to the main socket of the tripod head.

The bronze cylinder is held upon the spindle by a washer and screw, the head of this having a hole in its centre, through which the string of the plumb bob is passed.

The upper part of the instrument, with the socket, may thus be detached from the tripod head; and this, also, as in the case of all our instruments, can be unscrewed from the legs, so that both may be conveniently packed in the box.

A little under the upper parallel plate of the tripod head, and in the main socket, is a screw which can be moved into a corresponding crease, turned on the outside of the hollow cylinder, and thus made to hold the instrument in the tripod, when it is carried upon the shoulders.

It will be seen from the cut, that the arrangement just described allows long sockets, and yet brings the whole instrument down as closely as possible to the tripod head, both objects of great importance in the construction of any instrument.

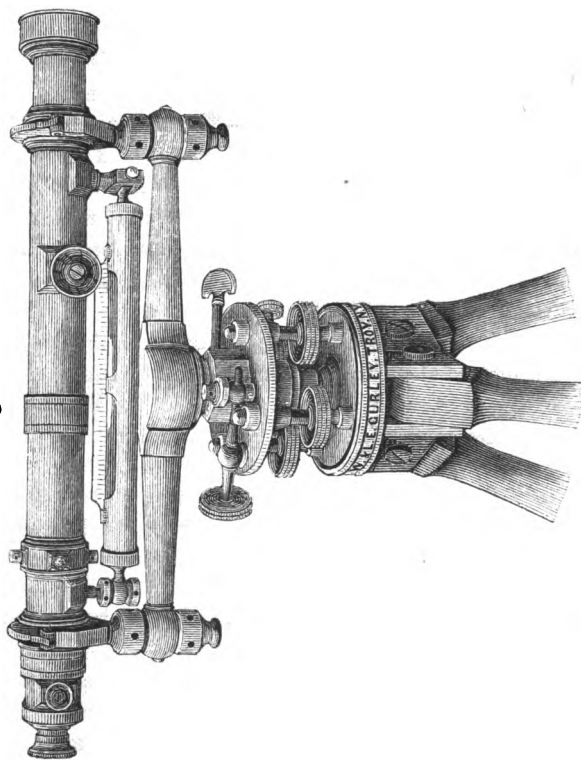
THE TRIPOD HEAD has the same plates and leveling screws, as that described in the account of the Engineer's transit; the tangent screw, however, is commonly single.

For our sixteen inch level we make a smaller tripod head, resembling that used with the lighter engineer's transit.

THE Y LEVEL.

SIXTEEN INCH TELESCOPE.

Fig. 12.



The Adjustments.

Having now completed the description of the different parts of the Leveling Instrument, we are ready to proceed with their adjustment, and shall begin with that of the object-slide, which, although always made by the maker, so permanently as to need no further attention at the hands of the engineer, unless in cases of derangement by accident, is yet peculiar to our instruments and therefore not familiar to many engineers.

TO ADJUST THE OBJECT SLIDE.—The maker selects an object as distant as may be distinctly observed, and upon it adjusts the line of collimation, in the manner hereafter described, making the centre of the wires to revolve without passing either above or below the point or line assumed.

In this position, the slide will be drawn in nearly as far as the telescope tube will allow.

He then, with the pinion head, moves out the slide until an object, distant about ten or fifteen feet, is brought clearly into view; again revolving the telescope in the Y's, he observes whether the wires will reverse upon this second object.

Should this happen to be the case, he will assume, that as the line of collimation is in adjustment for these two distances, it will be so for all intermediate ones, since the bearings of the slide are supposed to be true, and their planes parallel with each other.

If however, as is most probable, either or both wires fail to reverse upon the second point, he must then, by estimation, remove half the error by the screws at right angles to the hair sought to be corrected, remembering at the same time, that on account of the inversion of the eye-piece, he must move the slide in the direction which apparently increases the error. When both wires have thus been treated in succession, the line of collimation is adjusted on the near object, and the telescope again brought upon the most distant point; here the tube is again revolved, the reversion of the wires upon the object once more tested, and the correction, if necessary, made in precisely the same manner.

He proceeds thus, until the wires will reverse upon both objects, in succession ; the line of collimation will then be in adjustment at these, and all intermediate points, and by bringing the screw heads, in the course of the operation, to a firm bearing upon the washers beneath them, the adjustable ring will be fastened so as for many years to need no further adjustment.

When this has been completed, the thin brass ferule is slipped over the outside ring, concealing the screw heads, and avoiding the danger of their disturbance by an inexperienced operator.

In effecting this adjustment it is always best to bring the wires into the centre of the field of view, by moving the little screws working in the ring which embraces the eye-piece tube.

Should the engineer desire to make this adjustment, it will be necessary to remove the bubble tube, in order that the small screw immediately above its scale may be operated upon with the screw driver.

The adjustment we have now given is preparatory to those which follow, and are common to all leveling instruments of recent construction, and are all that the engineer will have to do with in using our own instruments. What is still necessary then is—

1. *To adjust the line of collimation*, or in other words, to bring both wires into the optical axis, so that their point of intersection will remain on any given point, during an entire revolution of the telescope.

2. *To bring the level bubble parallel* with the bearings of the Y rings, and with the longitudinal axis of the telescope.

3. *To adjust the wyes*, or to bring the bubble into a position at right angles to the vertical axis of the instrument.

TO ADJUST THE LINE OF COLLIMATION, set the tripod firmly, remove the Y pins from the clips, so as to allow the telescope to turn freely, clamp the instrument to the tripod head, and by the leveling and tangent screws, bring either of the wires

upon a clearly marked edge of some object, distant from one to five hundred feet.

Then with the hand carefully turn the telescope half way around, so that the same wire is compared with the object assumed.

Should it be found above or below, bring it half way back by moving the capstan head screws at right angles to it, remembering always the inverting property of the eye-piece; now bring the wire again upon the object and repeat the first operation until it will reverse correctly.

Proceed in the same manner with the other wire until the adjustment is completed.

Should both wires be much out, it will be well to bring them nearly correct before either is entirely adjusted.

When this is effected, slip off the covering of the eye-piece centering screws, and move each pair in succession with a small screw driver, until the wires are brought into the centre of the field of view.

The inversion of the eye-piece does not affect this operation, and the screws are moved direct.

To test the correctness of the centering, revolve the telescope, and observe whether it appears to shift the position of an object.

Should any movement be perceived, the centering is not perfectly effected.

It may here be repeated, that in all telescopes the position and adjustment of the line of collimation depends upon that of the object-glass; and therefore, that the movement of the eye-piece does not effect the adjustment of the wires in any respect.

When the centering has been once effected it remains permanent, the cover being slipped over to conceal and protect it from derangement at the hands of the curious, or inexperienced operator.

TO ADJUST THE LEVEL BUBBLE.—Clamp the instrument over either pair of leveling screws, and bring the bubble into the centre of the tube.

Now turn the telescope in the wyes, so as to bring the level tube on either side of the centre of the bar. Should the bubble run to the end it would show that the vertical plane, passing through the centre of the bubble, was not parallel to that drawn through the axis of the telescope rings.

To rectify the error, bring it by estimation half way back, with the capstan head screws, which are set in either side of the level holder, placed usually at the object end of the tube.

Again bring the level tube over the centre of the bar, and adjust the bubble in the centre, turn the level to either side, and if necessary, repeat the correction until the bubble will keep its position, when the tube is turned half an inch or more, to either side of the centre of the bar.

The necessity for this operation arises from the fact, that when the telescope is reversed end for end in the wyes in the other, and principal adjustment of the bubble, we are not certain of placing the level tube in the same vertical plane, and therefore, it would be almost impossible to effect the adjustment without a lateral correction.

Having now, in great measure, removed the preparatory difficulties, we proceed to make the level tube parallel with the bearings of the Y rings.

To do this, bring the bubble into the centre with the leveling screws, and then without jarring the instrument, take the telescope out of the wyes and reverse it end for end. Should the bubble run to either end, lower that end, or what is equivalent, raise the other by turning the small adjusting nuts, on one end of the level, until by estimation half the correction is made ; again bring the bubble into the centre and repeat the whole operation, until the reversion can be made without causing any change in the bubble.

It would be well to test the lateral adjustment, and make such correction as may be necessary in that, before the horizontal adjustment is entirely completed.

TO ADJUST THE WYES.—Having effected the previous adjustments, it remains now to describe that of the wyes, or, more precisely, that which brings the level into a position at right angles, to the vertical axis, so that the bubble will remain in the centre during an entire revolution of the instrument.

To do this, bring the level tube directly over the centre of the bar, and clamp the telescope firmly in the wyes, placing it as before, over two of the leveling screws, unclamp the socket, level the bubble, and turn the instrument half way round, so that the level bar may occupy the same position with respect to the leveling screws beneath.

Should the bubble run to either end, bring it half way back by the Y nuts on either end of the bar; now move the telescope over the other set of leveling screws, bring the bubble again into the centre and proceed precisely as above described, changing to each pair of screws, successively, until the adjustment is very nearly perfected, when it may be completed over a single pair.

The object of this approximate adjustment, is to bring the upper parallel plate of the tripod head into a position as nearly horizontally as possible, in order that no essential error may arise, in case the level, when reversed, is not brought precisely to its former situation. When the level has been thus completely adjusted, if the instrument is properly made, and the sockets well fitted to each other, and the tripod head, the bubble will reverse over each pair of screws and in any position.

Should the engineer be unable to make it perform correctly, he should examine the outside socket carefully to see that it sets securely in the main socket, and also notice that the clamp does not bear upon the ring which it encircles.

When these are correct, and the error still is manifested, it will, probably, be in the imperfection of the interior spindle.

After the adjustments of the level have been effected, and the bubble remains in the centre, in any position of the socket,

the engineer should carefully turn the telescope in the wyes, and sighting upon the end of the level, which has the horizontal adjustment along each side of the wye, make the tube as nearly vertical as possible.

When this has been secured, he may observe, through the telescope, the vertical edge of a building, noticing if the vertical hair is parallel to it; if not, he should loosen two of the cross-wire screws at right angles to each other, and with the hand on these, turn the ring inside, until the hair is made vertical; the line of collimation must then be corrected again, and the adjustments of the level will be complete.

To use the Level.

When using the instrument the legs must be set firmly into the ground, and neither the hands nor person of the operator be allowed to touch them, the bubble should then be brought over each pair of leveling screws successively, and leveled in each position, any corrections being made in the adjustments that may appear necessary.

Care should be taken to bring the wires precisely in focus, and the object distinctly in view, so that all errors of parallax may be avoided.

This error is seen when the eyes of an observer is moved to either side of the centre of the eye-piece of a telescope, in which the foci of the object and eye-glasses, are not brought precisely upon the cross-wires and object; in such a case, the wires will appear to move over the surface, and the observation will be liable to inaccuracy.

In all instances the wires and object, should be brought into view so perfectly, that the spider lines will appear to be fastened to the surface, and will remain in that position however the eye is moved.

If the socket of the instrument becomes so firmly set in the tripod head as to be difficult of removal in the ordinary way, the engineer should place the palm of his hands under the wye nuts at each end of the bar, and give a sudden upward shock to the bar, taking care also to hold his hands so as to grasp it the moment it is free.

Weight of Leveling Instrument.

The average weight of the different sizes of Levels, exclusive of the tripod legs, are as follows :

16	inch Telescope,	.....	11½	lbs.
18	" "	.....	12	"
20	" "	.....	12¾	"
22	" "	.....	13	"

LEVELING RODS.

The two kinds most generally used by American engineers, are both sliding rods, divided into hundredths of a foot and reading by verniers to thousandths.

Boston Rod.

That known as the Boston or Yankee Rod, is formed of two pieces of light baywood or mahogany, each about six and a half feet long, connected together by a tongue, and sliding easily by each other, in both directions.

One side is furnished with a clamp screw and vernier at each end, the other carries the divisions, marked on strips of satin wood, inlaid on either side.

The target is a rectangle of wood, fastened near one end of the divided side, and having its horizontal line just three-tenths from the extremity.

The target being fixed, when any height is taken above six feet, the rod is changed end for end, and the divisions read by the other vernier; the height to which the rod can be extended, being a little over eleven feet.

This kind of rod is very convenient from its great lightness, but the parts are made too frail to endure the rough usage of this country, and, therefore, American engineers have generally given the preference to another, made heavier and more substantial.

The New York Rod.

This rod is made of satin wood, in two pieces like the former, but sliding one from the other, the same end being always held on the ground, and the graduations starting from that point. The graduations are made to tenths and hundredths of a foot, the tenth figures being black, and the feet marked with a large red figure.

The front surface, on which the target moves, reads to six

and a half feet; when a greater height is required, the horizontal line of the target is fixed at that point, and the upper half of the rod, carrying the target, is moved out of the lower, the reading being now obtained by a vernier on the graduated side, up to an elevation of twelve feet.

The target is round, made of thick brass, having to strengthen it still more, a rib raised on the edge, which also protects the paint from being defaced.

The target moves easily on the rod, being kept in any position by the friction of the two flat plates of brass, which are pressed against two alternate sides, by small spiral springs, working in little thimbles attached to the band which surrounds the rod.

There is also a clamp screw on the back, by which it may be securely fastened to any part of the rod.

The face of the target is divided into quadrants, by horizontal and vertical diameters, which are also the boundaries of the alternate colors with which it is painted.

The colors usually preferred are white and red; sometimes white and black.

The opening in the face of the target is a little more than a tenth of a foot long, so that in any position a tenth or a foot figure, can be seen on the surface of the rod.

The right edge of the opening is chamfered, and divided into ten equal spaces, corresponding with nine hundredths on the rod; the divisions start from the horizontal line which separates the colors of the face.

The vernier, like that on the other side of the rod, reads to thousandths of a foot.

The clamp, which is screwed fast to the lower end of the upper sliding piece, has a moveable part which can be brought by the clamp screw firmly against the front surface of the lower half of the rod, and thus the two parts immoveably fastened to each other without marring the divided face of the rod.

TRIPODS.

In the tripods of all our instruments, the upper part of the leg is flattened, and fitted closely in the surfaces of the brass cheek pieces.

The cheeks are made very broad, and give a firm hold upon the leg, which may be tightened at any time by screwing up the bolts which pass through the top of the legs; this is especially necessary after the surface of the wood has been much worn.

The legs are round, four feet eight inches long, from head to point, and taper in each direction from a swell, turned about one-third the way down, from the head to the point.

The point, or shoe, is a tapering brass ferule, having an iron end; it is cemented, and riveted firmly to the wood.

We have three sizes of tripods :

1. **THE COMPASS TRIPOD**, seen in part in the cut of the vernier transit, and having the brass plate to which the cheeks are attached, three and three-fourth inches in diameter, and legs which are about one inch at the top, one and three-eighths at the swell, and seven-eighths at the bottom.

The legs are usually made of cherry, sometimes of mahogany, and the tripod is used with the various kinds of compasses, and with the vernier transit.

2. **THE MEDIUM SIZED TRIPOD**, shown with the surveyors' transit, and having a plate of same diameter as above, but with the cheeks made considerably broader, by curving at each end; the legs being also about an eighth of an inch larger throughout.

This tripod has mahogany legs, and is used with the surveyor's transit, the light engineer's transit, and the sixteen inch level.

3. **THE HEAVY TRIPOD**, shown with the engineers' transit, having a brass plate of four and one-fourth inches diameter, with extended cheek pieces, and with legs one and three-eighths of an inch at the top, one and three-fourths at the swell, and one and an eighth at the point.

The heavy size has also mahogany legs, and is used with the engineers' transit, and larger leveling instruments.

CHAINS.

Four Pole Chains.

The ordinary surveyor's chain is sixty-six feet, or four poles long, composed of one hundred links, each connected to the other by two rings, and furnished with tally marks at the end of every ten links.

Surveyors' Chains.

In all our chains the rings are sawed, and well closed, the ends of the wire forming the hook being also filed and bent close to the link, so as to avoid the danger of "kinking."

A link in measurement includes a ring at each end.

The handles are of brass, and each forms part of the end link, to which it is connected by a nut, by which also the length of the chain is adjusted.

The tallies are also of brass.

TWO POLE CHAINS have but fifty links, and are counted by its tallies from one end in a single direction.

SNAP FOR ALTERING CHAINS.—We furnish four pole chains so arranged, that by detaching a steel snap in the middle, the two parts can be separated, forming a two pole chain. This modification is made whenever desired, and without any additional charge.

SIZES OF WIRE.—Our surveyor's chains are made of the best refined iron wire, of sizes No. 8 or 10, as may be preferred; the diameter of No. 10 wire being about one-eighth of an inch, and that of No. 8 wire nearly a sixteenth larger.

Engineers' Chains.

Are either fifty or one hundred feet long, links have each 12 inches, and are furnished with handles, tallies, &c., and sometimes with a swivel in the middle to avoid being twisted in use.

In place of the round rings commonly made, we have substituted in these and some other chains, rings of an oval form, and find them almost one-third stronger, though made of the same kind of wire.

Steel Chains.

Chains made of steel wire, though more costly than those which we have just described, are yet often preferred on account of their greater lightness and strength.

They are made of any desired size or length, generally of No. 10, rarely of No. 8 wire, and are very stiff and strong.

BRAZED STEEL CHAINS.—A very portable and excellent measure is made, by a light steel chain, each link and ring of which is securely *brazed*, after being united together and tested.

Marking Pins.

Made either of iron, steel, or brass wire, as may be preferred.

They are sometimes loaded with a little mass of lead around the lower end, so as to answer as a plumb when dropped to the ground, from the suspended end of the chain.

Tape Measures.

The best are Chesterman's steel tapes, made of a thin ribbon of steel, which is jointed at intervals, and wound up in a leathern case, having a folding handle.

These tapes are of all lengths, from thirty-three to one hundred feet, divided into inches and links, or more usually, tenths of a foot, and links, the figures and graduations being raised on the surface of the steel.

The great cost of the steel tape has always prevented its general use, and the metallic tape of the same manufacturer is the only one commonly employed in American engineering.

These are of linen, and have also fine brass wires interwoven through their whole length.

They are thus measurably correct, even when wet.

They are mounted like the steel tapes, of like lengths, and similarly graduated.

PRICE LIST

OF

Engineering & Surveying Instruments.

COMPASSES.

Plain, with Jacob Staff mountings, 4 inch needle.....	\$20,00
“ “ “ “ “ 5 “ “	25,00
“ “ “ “ “ 6 “ “	28,00
Vernier, “ “ “ “ 6 “ “	35,00
Rail Road, “ “ “ “ 5½ “ “	55,00

EXTRAS.

Compass Tripod, with Cherry legs.....	\$5,00
“ “ “ lev'g screws and Clamp and Tang't movem't	12,00
“ “ “ “ without “ “ “	10,00
“ “ Mountings, without legs.....	4,00
Compound Tangent Ball.....	4,00
Brass cover for compass glass.....	1,00
Outkeeper, for keeping tally.....	1,00

TRANSITS.

Vernier, plain telescope,* 6 inch needle, with compass tripod.....	\$60,00
Surveyors' “ “ 4 “ “ “ adjusting “	100,00
“ “ “ 5 “ “ “ “ “	100,00
“ “ “ 5½ “ “ “ “ “	100,00
Engineers' “ “ 4 “ “ “ “ “	120,00
“ “ “ 5 “ “ “ “ “	125,00
“ “ “ with watch telescope	150,00
“ “ “ theodolite axis.....	150,00
“ “ “ two telescopes.....	190,00

EXTRAS.

Vertical circle, 3½ in. diameter, vernier reading to five minutes...	\$5,00
“ “ 4½ “ “ “ “ single “ ...	10,00
Clamp and Tangent movement to axis of telescope.....	5,00
Level on Telescope, with ground bubble and scale.....	10,00
Rack and pinion movement to eye glass.....	5,00
Sights on telescope with folding joints.....	5,00
“ “ Standards at right angles to telescope.....	5,00

* A “plain” telescope is one without any of the attachments, as the clamp and tangent, vertical circle and level.

SOLAR COMPASSES.

No. 1, Solar and Rail Road Compass, with leveling tripod, &c....	\$155,00
" 1, " " " " " adjusting socket and tripod	153,00
" 2, Solar Compass, proper " " " "	145,00
" 3, Solar Telescope Compass " " " "	160,00
Micrometer telescope, of from 16 to 18 inches, made with plain brass tube, and with moveable clips to attach to sights of Nos. 1 and 2.....	\$7,00
Micrometer telescope, 16 to 20 inches long, with rack movement to object glass, and of superior finish, for Nos. 1 and 2..	\$10 to \$15
Micrometer in telescope of No. 3, gratis.	

LEVELING RODS.

Yankee or Boston.....	\$12,00
New York, with improved mountings.....	12,00

LEVELING INSTRUMENTS.

Sixteen inch telescope, with adjusting tripod.....	\$90,00
Eighteen " " " " " ".....	90,00
Twenty " " " " " ".....	90,00
Twenty-two " " " " " ".....	90,00
Farm Level " " " " " ".....	45,00
Builders' Level " " " " " ".....	50,00

CHAINS.

100 feet, with oval rings, No. 5, refined iron wire.....	\$7,50
" " " " " " 6 " " " ".....	6,00
50 " " " " " " 5 " " " ".....	4,00
" " " " " " 6 " " " ".....	3,50
66 " " round " " 8 " " " ".....	3,00
33 " " " " " 8 " " " ".....	1,75
66 " " " " " 10 " " " ".....	2,50
33 " " " " " 10 " " " ".....	1,50
100 " " " " " 8, best steel wire.....	8,00
100 " " " " " 10 " " " ".....	7,00
50 " " " " " 8 " " " ".....	4,50
50 " " " " " 10 " " " ".....	3,75
66 " " " " " 8 " " " ".....	7,00
66 " " " " " 10 " " " ".....	5,00
33 " " " " " 8 " " " ".....	3,75
33 " " " " " 10 " " " ".....	2,75
100 " brazed links, " 12 " " " ".....	11,50
50 " " " " " 12 " " " ".....	6,00
66 " " " " " 12 " " " ".....	10,00
33 " " " " " 12 " " " ".....	5,00

MARKING PINS.

Set of 11 pins, iron wire, No. 4.....	\$0,75
" " " steel " " 6.....	1,00
" " " brass " " 4.....	1,50

MEASURING TAPES.

Chesterman's steel, 33 feet.....	\$7,50
“ “ 50 “	11,50
“ “ 66 “	14,50
“ “ 100 “	20,00
“ metallic, 33 “	2,50
“ “ 50 “	3,00
“ “ 60 “	3,25
“ “ 66 “	3,50
“ “ 70 “	3,75
“ “ 80 “	4,00
“ “ 100 “	5,00
Linen tapes, 50 feet.....	2,50
“ “ 70 “	3,00
“ “ 100 “	4,00

POCKET COMPASSES.

With folding sights, 2½ inch needle, very serviceable for retracing	
lines once surveyed.....	\$6,00
“ “ “ “ “ “ with Jacob staff mountings..	7,50
“ “ “ 3½ “ “ “ “ “ “ ..	9,00
“ “ “ “ “ “ without “ “ ..	8,00
Without sights, 1 to 2 “ “	from 25 cts. to 2,50
Miner's Compasses, for tracing iron ore.....	6,00

DRAWING INSTRUMENTS, &c.

French and German.....	see pages 45-52
Swiss.....	“ “ 53-56
Drawing, profile, and cross section paper.....	“ “ 57-58
Colors, pencils, ink, brushes, &c.....	“ “ 58-59
Books on Engineering and Surveying.....	“ “ —60

INFORMATION TO PURCHASERS.

INSTRUMENTS WANTED.—In regard to the best kind of Instruments for particular purposes, we would here say, that where only common surveying, or the bearing of lines in the surveys for County maps is required, a Plain Compass is all that is necessary. In cases where the variation of the needle is to be allowed, as in retracing the lines of an old survey, &c , the Vernier Compass, or the Vernier Transit, is required.

Where, in addition to the variation of the needle, horizontal angles are to be taken, and in cases of local attraction, the Rail Road Compass is preferable; and for a mixed practice of Surveying and Engineering, we consider the Surveyor's Transit superior to any instrument made by us or any other manufacturers.

In the surveys of U. S. public lands, the county and township lines are required to be run by such instruments as the Solar Compass.

Where Engineering is the exclusive design, the Engineers' Transit and the Leveling Instruments are of course indispensable.

The Farm and Builders' Levels, are intended for laying out mill seats and determining the levels of buildings in course of erection.

WARRANTY.—All our instruments are examined and tested by us in person, and are sent to the purchaser adjusted and ready for immediate use.

They are warranted correct in all their parts—we agreeing in the event of any defect appearing after reasonable use, to repair, or replace with a new and perfect instrument, promptly and at our own cost, express charges included, or we will refund the money and the express charges paid by him.

Instances may sometimes occur, in a business as large and widely extended as ours, where, owing to careless transportation, or to defects escaping the closest scrutiny of the maker, instruments may reach our customers in bad condition. We consider the retention of such instruments in all cases an injury very much greater to us than to the purchaser himself.

TRIAL OF INSTRUMENTS.—It may often happen that this statement of the prices and quality of our instruments, may come into the hands of those who are entirely unacquainted with us, or with the quality of our work, and who therefore feel unwilling to make a final purchase of an article. of the excellence of which they are not perfectly assured.

To such we make the following proposition: We will send the instrument to the express station nearest the person giving the order, and direct

the Express Agent, on delivery of the same, to collect our bill, together with charges of transportation, and hold the money on deposit until the purchaser shall have had—say two weeks actual trial of its quality.

If not found as represented he may return the Instrument before the expiration of that time, and receive the money paid, in full, including express charges, and direct the Instrument to be returned to us.

EXTENT OF OUR BUSINESS.—The manufacture of surveying instruments by us has now been continued for more than thirteen years, and during all that time our facilities have been continually increased, until now they are very much superior to those of any other similar establishment in the United States.

To show the extent of our business, we here transcribe from our order and sales book, a statement of the number and variety, of the larger instruments, furnished to customers during the year 1857;—a year, it will be remembered, especially in its closing half, of extreme financial distress, and almost entire prostration of the manufacturing interest, through our whole country.

Whole number, 295, comprising—110 Vernier Compasses, 11 Rail Road Compasses, 17 Plain Compasses, 42 Engineers' Transits, 56 Surveyors' Transits, 30 Vernier Transits and 29 Leveling Instruments.

The destination of these instruments were as follows: 42 were sent to Illinois, 41 to New York, 32 to Iowa, 24 to Minnesota, 23 to Pennsylvania, 22 to Wisconsin, 19 to Missouri, 18 to Indiana, 12 to Ohio, 6 to Michigan, 6 to Nebraska, 6 to Kansas, 6 to Kentucky, 5 to Massachusetts, 4 to Canada, 4 to Brazil, 4 to California, 3 to Rhode Island, 3 to Tennessee, 3 to Texas, 2 to Connecticut, 2 to New Jersey, 2 to Vermont, 2 to Mississippi, 1 to Alabama, 1 to Arkansas, 1 to Virginia, and 1 to Georgia.

LOW PRICES OF OUR INSTRUMENTS—It is often urged by other makers, and persons prejudiced in their favor, that it is impossible to make first rate instruments, at the prices charged by us, and which are so very far below those of other skilful manufacturers.

We have only to reply, in addition to what we have stated in our Warranty, that a visit to our works, and a comparison of our facilities, with those of our competitors, would dispel all question as to our ability to surpass them, not only in the cheapness, but also in the superior quality of our work

PACKING, &c.—Each instrument is packed in a well finished mahogany case, furnished with lock and key and brass hooks, the larger ones having besides these, a leather strap for conveyance in carrying. Each case is provided with screw drivers, adjusting pin, and wrench for centre-pin, and, if accompanied by a tripod, with a brass plumb-bob; with all instru-

ments for taking angles, without the needle, a reading microscope is also furnished.

Unless the purchaser is already supplied, each instrument is accompanied by our "Manual," giving full instructions for such adjustments and repairs as are possible to one not provided with the facilities of an instrument maker.

When sent to the purchaser, the mahogany cases are carefully enclosed in outside packing boxes, of pine, made a little larger on all sides to allow the introduction of elastic material, and so effectually are our instruments protected by these precautions, that of several thousand sent out by us during the last thirteen years, in all seasons, by every mode of transportation, and to all parts of the Union and the Canadas, not more than three or four have sustained any serious injury.

MEANS OF TRANSPORTATION.—Instruments can be sent by Express to almost every town in the United States and Canadas, regular agents being located at all the more important points, by whom they are forwarded to smaller places by stage. The charges of transportation from New York to the purchaser are in all cases to be borne by him, we guaranteeing the safe arrival of our instruments to the extent of express transportation, and holding the Express Companies responsible to us for all losses or damages on the way.

TERMS OF PAYMENT are uniformly cash, and we have but one price. Our prices for instruments are nearly one-third less than those of other makers of established reputation. They are as low as we think instruments of equal quality can be made, and will not be varied from the list given on the previous pages

DRAWING INSTRUMENTS.

To guide the surveyor and engineer in the selection of Drawing Instruments, we here add a detailed description, with illustrations and prices of the separate pieces, and cases of the different kinds in general use.

Those we shall first mention are of German and French manufacture, are of good quality and finish, and such as the great majority of purchasers select and use.

The Swiss instruments are of better quality and finish, and are held at much higher rates.

The prices given with all the instruments described are the same as those of other importers.

FRENCH AND GERMAN INSTRUMENTS.

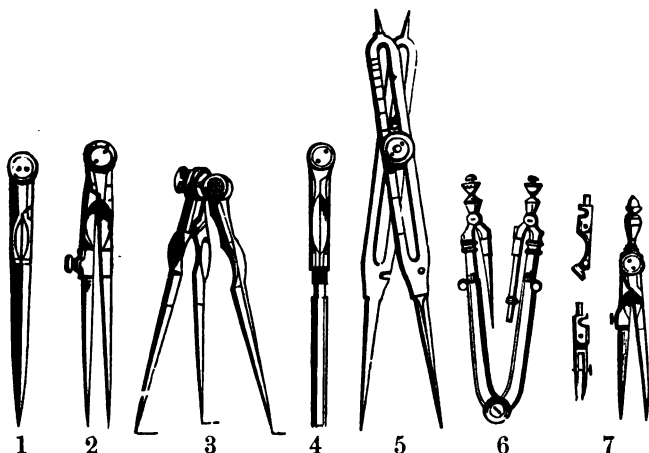


FIGURE.

PRICE.

1.	Brass Dividers, brass joints, rivet-heads, 5 inch	12 cts , 6 inch,-	\$0,18
1.	“ “ steel joints, screw-heads, 5 inch	25 cts., 6 inch,	,37
1.	Fine Dividers, steel joints, turned cheeks, 4 inch	50 cts , 5 inch	
		62 cts., 6 inch, - - - - -	,75
2.	Fine Dividers, steel joints, hair spring, 5 inch	\$1,00, 6 inch, -	1,37
2.	“ “ “ “ superior 5 in.	\$1,37, 6 inch	1,75
1.	German Silver, steel joints, turned cheeks, superior, 5 inch,	-	,75
1.	“ “ “ “ “ 6 inch,	-	,87
2.	“ “ “ hair spring, fine, 5 inch	\$1,50, 6 in.	1,75
2.	“ “ “ “ superior, 5 inch	\$1,75, 6 in.	2,00
3.	Three legged Dividers, brass, \$2,62, German Silver, \$2,75 to -		3,50
	Bisecting, German Silver, \$1,00 to - - - -		2,50
4.	Pocket Dividers, German Silver,	- - - -	2,00
5.	Proportional Compasses, brass, \$1,50 to \$3 ; full divided \$7 to		8,50
5.	“ “ German Silver, \$7,25 to - - -		9,00
6.	Pillar Compasses, brass, \$5,50 and \$5,75, Ger. Silver, \$6,75 and		8,00
7.	Dividers, brass, 3 inch, with pen and pencil point, med. quality,		1,25
7.	“ German Silver, “ “ “ fine “		2,50



8



9

8.	Dividers, brass, 5 inch, med. quality, with pen and pencil point,	,75
	6 inch, - - - - -	,87
8.	“ “ 5 inch, med. quality, with addition of lengthening bar, - - - - -	,87
8.	Dividers, German Silver, 6 inch, fine quality, pen, pencil, bar and needle point, - - - - -	3,25
9.	Furniture for Beam Compasses, brass, \$3, with adjusting screw,	3,75
9.	“ “ “ “ German Silver, \$4,25 to -	5,00

BOW PENS AND PENCILS, SPACING DIVIDERS AND DRAWING PENS.

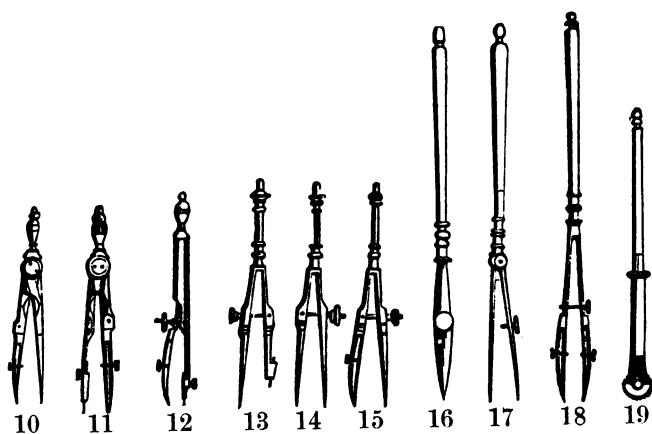


FIGURE.

PRICE.

10. Bow Pens, brass, 50 cts. to	-	-	-	-	-	\$1,25
11. " " with joint in each leg, German Silver,	-	-	-	-	-	2,25
Bow Pencils, " " " " " "	-	-	-	-	-	2,25
12. Bow Pens. with adjusting screw, brass, \$1,25; German Silver,	-	-	-	-	-	1,50
12. " " " " " and hinges to pen, brass,	-	-	-	-	-	1,50
German Silver, -	-	-	-	-	-	2,00
12. Bow Pens and adj. screw and pencil point, German Silver,	-	-	-	-	-	2,25
12. Bow Pens with adjusting screw, German Silver, with pencil and needle point, and extra pen point,	-	-	-	-	-	3,50
13. Bow Pencils, solid steel, German Silver or Ivory handles,	-	-	-	-	-	1,75
14. Spacing dividers, " " " "	-	-	-	-	-	1,50
15. Bow Pens, " " " "	-	-	-	-	-	1,75
16. Drawing Pens, 25, 37 and	-	-	-	-	-	,50
17. " " with hinge,	-	-	-	-	-	,50
17. " " " and protracting pin. 62 and	-	-	-	-	-	,75
17. " " " extra fine,	-	-	-	-	-	1,25
17. " " all German Silver for red ink,	-	-	-	-	-	,75
18. " " double or Railroad Pens, 1,75 and	-	-	-	-	-	2,50
19. Roulettes, for dotting lines, 50, 62 and	-	-	-	-	-	,75

SQUARES, PROTRACTORS, &c.

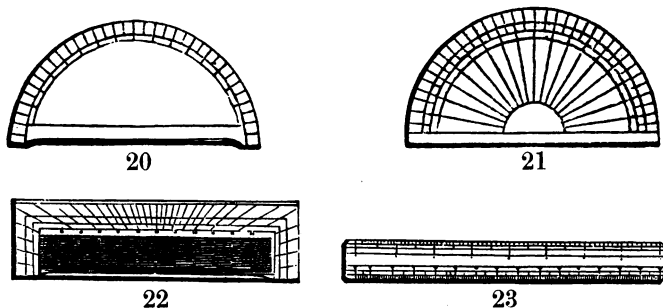


FIGURE.

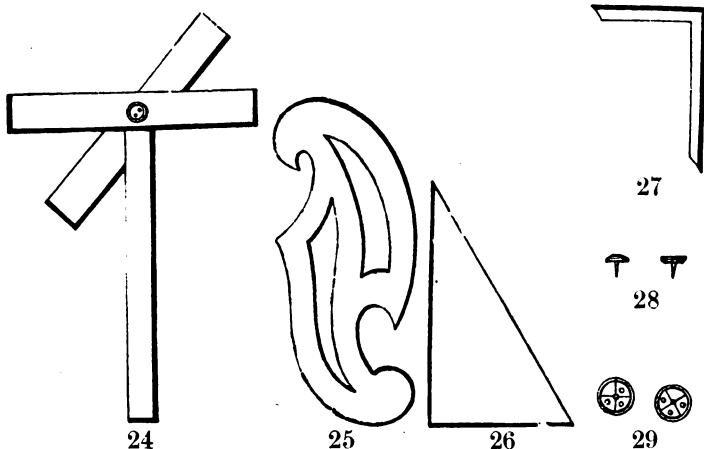
PRICE.

20. Brass Protractors, assorted sizes, 12½ cts. to	-	-	-	\$1,50
20. " " with steel blade, 2 to 3 feet long,	-	-	-	7,50
20. German Silver Protractors, with horn centre and movable arm, divided to ¼ degrees, \$4, to	-	-	-	6,50
20. German Silver Protractors, whole circle, horn centre, and movable arm, divided to ¼ degrees, \$4,75 to	-	-	-	8,75
21. Horn Protractors, 4 inch 12½ cts., 5 inch 25 cts., 6 inch,	-	-	-	,37
22. Ivory Protractors for Engineers, 6 inch, \$1,50, 2,00, 2,50 and	-	-	-	3,00
22. " " " " 2½ inch wide, very superior, 6 inches long, \$3,50 and	-	-	-	5,00
22. Ivory Protractors for Engineers, 12 inch, extra wide and full,	-	-	-	8,00
Ivory Scales, 6 inch, usual quality,	-	-	-	,62
23. Ivory Scales, 12 inch, chain on edge only, 20x40, 30x50, 40x60, \$2,25 to	-	-	-	3,00
23. Ivory Scales, 12 inch, chain on edge only, 50x100,	-	-	-	3,75
" " 12 inch, for Architects, 2,25, 2,50, 3,00 and	-	-	-	3,25
" " 12 inch, 16 scales off edge, in tenths, or twelfths, \$3,50 and	-	-	-	4,00
23. Boxwood Scales, 6 inch, usual quality,	-	-	-	,25
22. " Protracting Scales, 6 inch,	-	-	-	,62
23. " Scales, 12 inch chain, 10 to 60 on edge,	-	-	-	1,00
" " 12 inch, 16 scales off edge, in tenths and twelfths,	-	-	-	1,50
" " 12 inch Architects, graduated from ¼ to 3 inches,	-	-	-	1,50
" " 3 sided chain, giving 6 scales all on edge, \$1,50,	-	-	-	3,00
Boxwood Scales, 3 sided, Architects, giving 12 scales all on edge, \$1,50 to	-	-	-	3,00

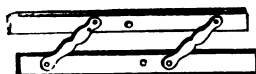
FIGURE.

PRICE.

23. Boxwood Gunter Scales, 1 foot, 37 and 50 cts, two feet,	\$0,75
" Pocket Rules, 1 foot, 4 fold, 25 to 75 cts. Ivory do.	
62 cts. to - - - - -	2,00
Paper Scales, 18 inches long, in sets of six, graduated from $\frac{1}{8}$ to	
three inches, per set, - - - - -	1.25



24. T Squares, wood, with arm, 18 to 30 inches long, -	\$0,75
24. " " " " and swivel head, - - -	1,25
24. " " " " " " and brass edges	
to arm, \$1,75 to - - - - -	2,75
25. Irregular Curves, various sizes, 25 to 37 and - - -	,50
26. Ebony Triangles 37 cts. Pear wood do. - - -	,25
27. German Silver Squares and Triangles, 50 cts. to - - -	2,50
28. Pins to fasten paper to the drawing board, brass, 25, 37 and	
50 cts. German Silver, per dozen, - - - - -	,60
29. Horn Centres, to prevent the dividers from marking the paper, -	,18



30

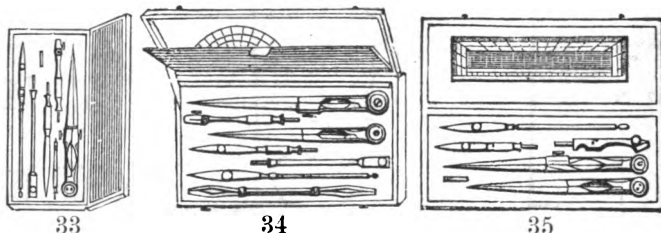


31

3*

FIGURE.	PRICE.
30. Parallel Rules, Ebony 6 inch, 37 cts., 9 in. 62, 12 in. 75, 15 in. -	\$1,00
30. Parallel Rules, Ivory, 6 inch, - - - - -	1,00
30. " " Brass, fine, 9 in. \$1,75, 12 in. \$2,50, 16 in. -	3,12
" " " on rollers, 6 inch \$4,25, 12 inch -	5,75
" " Ebony, " 12 in. \$2,62, 15 in. \$3,37, 18 in. -	4,00
" " Ivory, " graduated edges, 12 in. -	4,25
18 inch, - - - - -	6,00
31. Pentagraphs of Ebony, very accurately made, - - -	14,00
32. " of Brass, " " " - - -	22,00

CASES OF MATHEMATICAL DRAWING INSTRUMENTS.

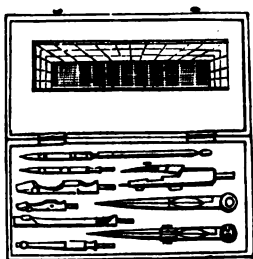


33. No. 636, Morocco case—small German Silver instruments—
Needle point, 4 inch dividers, fine quality, - - - 3,50
33. No. 25, wood box, brass instruments, without needle points,
medium quality, - - - - - 1,25
34. No. 32, wood box, brass instruments, 5 inch dividers, medium
quality, box scale, - - - - - 1,75
34. No. 33, wood box, brass instruments, 6 inch dividers, medium
quality, Ivory scale, - - - - - 2,25
34. No. 600, Morocco, brass instruments, common quality, box pro-
tractor, (fig. 22), - - - - - 3,50
35. No. 154, Morocco, German Silver instruments, fine quality,
Ivory protractor, (22), - - - - - 3,50
35. No. 054, Morocco, German Silver instruments, with addition of
lengthening bar, - - - - - 4,25
35. No. 645, Morocco German Silver instruments, without plain
dividers, - - - - - 3,00

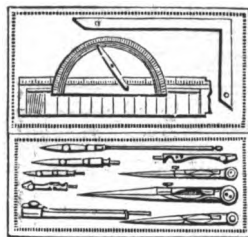
FIGURE.

PRICE.

35. No. 023, Morocco box, brass instruments, good quality, - \$2,50
 35. No. 599, " " " " common quality, box
 protractor, - - - - - 1,25

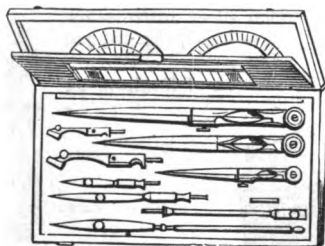


36

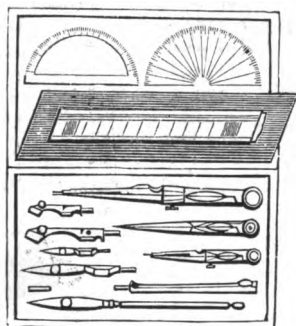


37

36. No. 736, Morocco box, German Silver instruments, fine quality
 Ivory protractor, - - - - - 6,50
 37. No. 745, Morocco box, German Silver instruments, fine quality, 6,50

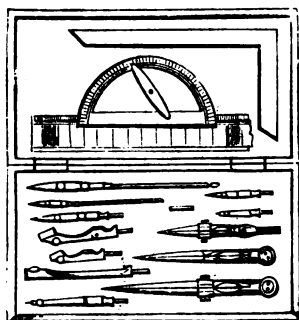


38

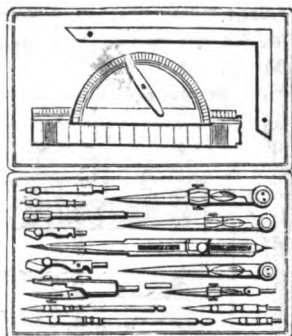


39

38. No. 15, wood box, brass instruments, medium quality, - 3,50
 39. " 29, " " " needle points, med. qual. 3,75
 39. " 39, " " " " with bow pen, - 4,25
 39. " 40, wood box, brass instruments, needle points, with bow
 pen and proportional compasses, - - - 6,00
 39. No. 585, Morocco case, brass instruments, fine quality, - 5,50



40

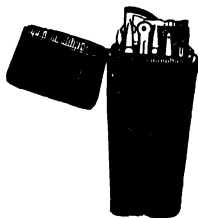


41

FIGURE,

PRICE.

40.	No. 305, wood box, German Silver instruments, fine quality,	\$10,00
40.	" 535, " " " with bow pen, -	13,00
40.	" 036, " " " " " and hair dividers, - - - - -	14,00
41.	" 845, wood box, German Silver instruments, fine quality, -	25,00
41.	" 655, " " " with addition of Railroad Pen, (fig. 18) - - - - -	27,00
41.	" 455, wood box, lock and key, superior quality without the proportional compasses, but with double drawing pen. (fig. 18) and additional pen, (fig. 17) - - - - -	30,00
41.	" 126, wood box, lock and key, German silver instruments, superior quality, with addition of Railroad Pen, (fig. 18) and one Pen, (fig. 17) - - - - -	40,00
41.	" 326, same as No. 126, but with addition of furniture for Beam Compasses, (fig. 9) - - - - -	48,00



42

42.	No. 5, Fish skin cases, brass instruments, box scale, -	2,50
"	55, " " " " Ivory scale, -	2,75
"	57, " " " " Ivory scale, steel joints, -	3,50

GERMAN SILVER SWISS DRAWING INSTRUMENTS.

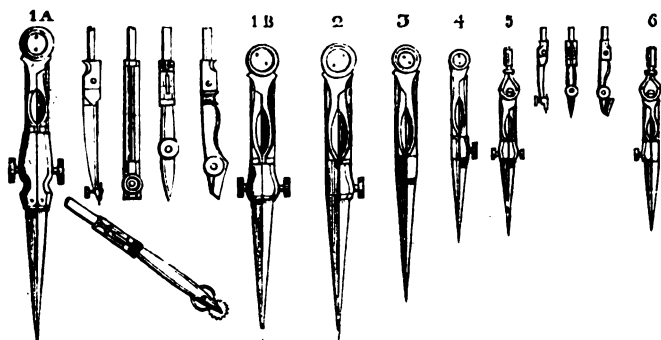


FIGURE.

PRICE.

- | | |
|--|--------------------|
| No. 1 A, Drawing Compass, joints in legs, $6\frac{1}{2}$ to 7 in. long, with pen, pencil-holder, needle pt., lengthening bar and dot. pen, | \$6,50 |
| No. 1 B, Drawing Compass, 6 inches long, with pen, pencil-holder, lengthening bar and needle point, | 5,00 |
| 2. Hair Spring Divider, 5-6 inch, | 2,00 |
| 3. Plain Divider, $4\frac{1}{2}$ inch, | 1,37 $\frac{1}{2}$ |
| 3. " " 5-6 " " | 1,50 |
| 4. Hair " $4\frac{1}{2}$ " " | 1,75 |
| 5. Drawing Compass, 4 in., with pen, pencil-holder and needle pt. | 4,00 |
| 6. The same, without the needle point, | 3,00 |

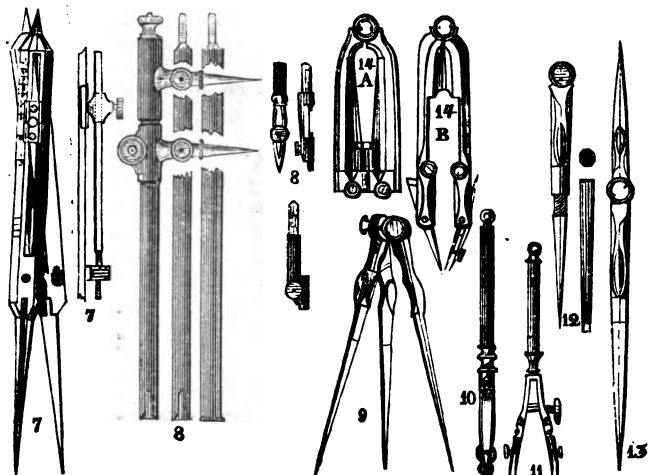
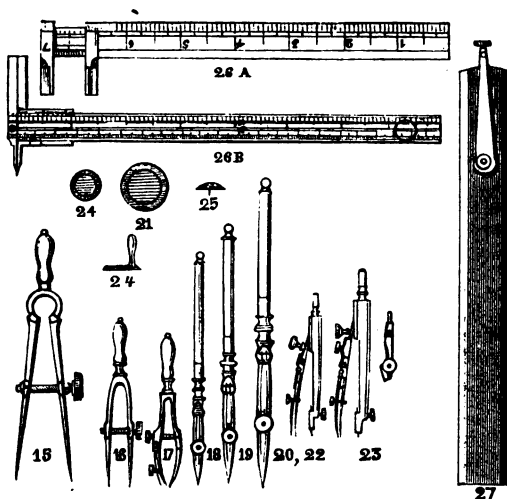


FIGURE.

PRICE.

7. Proportional Compass, with full divisions for lines and circles, -	-	-	-	-	-	\$8,00
7. The same, with Micrometer Screw, -	-	-	-	-	-	9,00
8. Beam Compass, 19-20 inches long, in 2 German Silver bars, -	-	-	-	-	-	8,00
8. The same, 20 inches long, in 3 German Silver bars, -	-	-	-	-	-	9,00
8. " " 36 " " 4 " " " -	-	-	-	-	-	10,00
8. " " 48 " " 4 " " " -	-	-	-	-	-	12,50
9. Triangular Compass, -	-	-	-	-	-	3,00
10. Dotting Pen, -	-	-	-	-	-	1,75
11. Road Pen, -	-	-	-	-	-	2,50
12. Pocket Divider, -	-	-	-	-	-	1,75
13. Whole and Half Divider, -	-	-	-	-	-	2,50
No. 14 A, Universal Compass, with points to shift, -	-	-	-	-	-	4,50
No. 14 B, Universal Compass, with points to turn, -	-	-	-	-	-	5,00

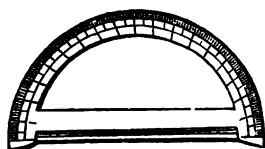


15. Large Steel Spring Divider, -	-	-	-	-	-	2,00
16. Small Steel Stepping Divider, -	-	-	-	-	-	1,25
17. Small Steel Compass, with Pen, -	-	-	-	-	-	1,50
17. Small Steel Bow Pencil, -	-	-	-	-	-	1,50
18. Drawing Pen, with joint $4\frac{1}{2}$ inches long, -	-	-	-	-	-	1,00
19. " " " $5\frac{1}{2}$ " -	-	-	-	-	-	1,25
20. " " " 6 " -	-	-	-	-	-	1,50

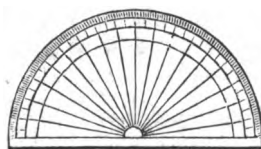
FIGURE.

PRICE.

21. Horn Centre, with German Silver frame,	-	-	-	\$0,37
22. Bow Pen,	-	-	-	1,80
23. Bow Pen, with pencil holder,	-	-	-	2,50
24. German Silver Centre, with handle,	-	-	-	,37
25. German Silver Paper Pins, per doz.	-	-	-	,60
25. Steel " " "	-	-	-	,75
A No. 26, Calliper,	-	-	-	4,00
B " " English pattern, with two verniers,	-	-	-	7,00
27. Eccentric Rule,	-	-	-	1,80

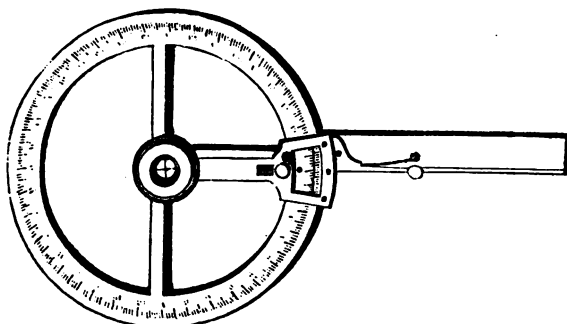


28



28

28. Protractor, $4\frac{1}{2}$ inch diameter, whole degrees,	-	-	-	1,25
28. " $5\frac{1}{2}$ " half " "	-	-	-	1,50
28. " 6 " half " "	-	-	-	1,62
28. " $6\frac{1}{2}$ " quarter, " "	-	-	-	2,50
28. Horn Protractors, from 25 to -	-	-	-	,50
28. Circular Protractor with arm, 8 in. diameter, quarter degrees,	-	-	-	8,00
28. " " " 10 " " " "	-	-	-	10,50



29

29. Circular Protractor with vernier, 8 inch diam., quarter degree,	12,00
29. " " " 10 " " "	13,00

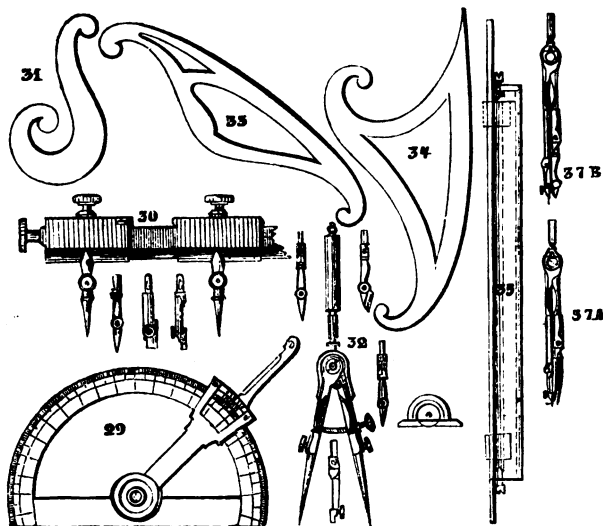


FIGURE.

PRICE.

29.	Half Circle Protractor with vernier, $5\frac{1}{2}$ inch diam. half deg.	-	\$7,50
29.	" " " 8 " quarter "	-	9,00
30.	Beam Compass furniture, for wood beams,	-	6,00
31. 33 and 34.	Horn Curves, each	-	,50
32	Drawing Compass, 4 inches, with long Ivory handle, spring and micrometer, with 2 pens, pencil-holder and needle pt.,	-	5,00
35.	Parallel Rule, with rollers,	-	2,00
36.	Protractor Scale, divided to $\frac{1}{2}^\circ$,	-	2,75
36.	" " " $\frac{1}{4}^\circ$,	-	3,75
A No. 37.	Bow Compass, fast needle point and pen, with joints in both legs,	-	2,00
B No. 37.	Bow Compass, fast needle point and pencil-holder, with joints in both legs,	-	2,00
38.	Lengthening Compass,	-	12,00

Persons desiring a complete Case have but to name the numbers of the Instruments they want in the Box.

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In filling orders for instruments in different parts of the country, we have frequently been called upon to furnish in addition, the various materials for the office work of the Surveyor and Engineer, as Drawing Paper, Colors, Text Books, &c.

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Imperial,.....	30x21 do		do	3,37
Elephant,.....	28x22 do		do	3,37
Columbier,.....	34x23 do		do	5,25
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No. 1, 54 inches wide,		per yard,.....	25 cents.
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Demy,	20x15 inches,		per quire,.....	\$1,12
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Double Elephant,...	40x26 do		do	4,50

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Extra Finish, English, 36	do do	do	56 do
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Ruled and Section...22x17 do 9 do				do	10 do
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Level Books	each....	50 cents.
Transit do	do	50 do
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Flat Camel-hair Brushes, 1 in. 18 cts. ; 1 $\frac{1}{2}$ in. 25 ; 2 in. 31 ; 2 $\frac{1}{2}$ in. 38 ; 3 in. 44.	
Sable Pencil do in quill,	per doz.,....\$1,25
Camel-hair do do	do 37 $\frac{1}{2}$ cents.
Erasing Knives,	each...37 $\frac{1}{2}$ do

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Per Cake 37 $\frac{1}{2}$ Cents.

Brown, Rose,	Scarlet,	Indian Yellow,
Pink, and	Crimson, and	Intense Brown
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Per Cake 75 Cents, Half-Cake 37 $\frac{1}{2}$ Cents.

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Per Cake 25 Cents.

Lamp Black,	Prussian Green,	Vandyke Brown,
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Olive Green,	Red Lead,	Vermilion,
Chrome Yellow,	Roman Ochre,	Yellow Ochre,
Payne's Grey,	Sap Green,	Prussian Blue,
Terre Verde,	Yellow Lake,	Hooker's Green, Nos. 1
Cologne Earth,	Burnt Sienna,	Burnt Umber, [& 2
Antwerp Blue,	Flake White,	Indigo,
Ivory Black,	King's Yellow,	Gamboge.

When desired mahogany boxes, packed with 6, 12, 18 and 24 cakes are furnished without additional charge.

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Mahogany Boxes, 36 colors, \$6.25; 30 colors, \$5.25; 24 colors....	\$4.25
do do 18 do 3.25; 12 do 2.25; 6 do	1.25
Mahogany and Rose Wood Chests, with Lock, Drawer, Paint Stone, Water Glass, India Ink, Brushes, and 12 colors,	\$6.00.
do do do do 18 do	7.50.
do do do do 24 do	10.00.

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India Rubber, best quality,.....	each,.... 6 to 25 cents.
India Ink, best quality,.....	12½ cents to \$1.50
do liquid, in bottles,.....	50 cents.
Mouth Glue,.....	3 do

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Gillott's,.....	per doz,.... 50 cents.
do Lithograph Crow Quill,.....	do. 50 do

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A. W. FABER'S POLYGRADES (GENUINE).

Hexagon Gilt, Nos. 1, 2, 3, 4, 5,.....	per doz ,.... \$1.00
Black or Red Gilt, Round, 1, 2, 3, 4,.....	do50
Black or Yellow Gilt, Round, 1, 2, 3, 4, small,.....	do .... .37
One Box containing 7 Pencils, for Engineers, sliding ends to box,...	.62
do do 7 do BB to HHH,.....	.56
do do 4 do Nos. 1 to 4,.....	.25

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BECKETT'S Letter Book for Draughtsmen,....	3,00	,25
Engineer's Pocket Companion for the Field. By Griswold,.....	1,25	,06
Engineer's Pocket Table Book. By Scribner,..	1,25	,06
Engineers' Field Book. Hencks,.....	1,75	,08
Engineers' Field Book. C. S. Cross,.....	1,00	,05
LYONS' Table for Excavations and Embankments. Per sheet 25 cts. ; or 24 sheets, bound complete,	7,50	

When any of the above works are ordered to be sent by mail, the postage, which must be pre-paid, will be added to the price of the work.

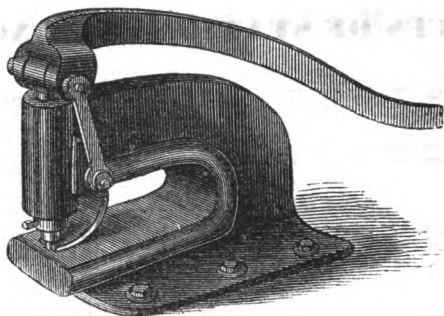
Should any other works on kindred topics be desired, I will furnish them at Publishers price.

PRICES OF STATIONARY ENGINES.

30	25	20	18	15	12	10	9	8	6	4	3	Horse Power.
13	12	11	11	10	9	8	7	7	6	5	4 in.	Diam. of Cylinder.
30	30	30	24	24	20	20	20	16	16	12	12 in.	Length of Stroke.
1,275	1,150	1,000	825	725	525	450	400	375	300	230	\$190	Price of Engine and Fly Wheel.
120	115	110	100	95	85	80	75	70	65	55	\$50	Price of Pump and Heater.
1,400	1,250	1,110	925	810	600	525	475	450	370	285	\$240	Price of Engine, Pump and Heater.
48	42	42	36	36	32	32	32	32	32	26	26 in.	Diam. of Boiler.
30	30	25	30	28	24	20	18	16	12	14	10 ft.	Length of Boiler.
2	2	2	2	2	2	2	2	2	2	1	1	No. of Flues.
16	14	14	12	12	10	10	10	10	10	11	11 in.	Diam. of Flues.
2,800	2,400	2,000	1,800	1,550	1,250	1,100	975	850	700	575	\$475	Price of Engine, Boiler, Pump, Heater, & Everything Complete.

PRICES OF PORTABLE ENGINES.

6 Horse	.....	\$700
8	.....	900
10	.....	1,100
12	.....	1,300



THE CELEBRATED TOM THUMB PUNCH.

This Punch, from its simplicity and effectiveness, is universally admitted by those who have used it to be superior to any in use. The application of power is the same as in the Rail Punch, hereafter described. It will punch a round or square hole from one-eighth to three-eighth inch in diameter, in a plate of iron from one-sixteenth to one-fourth inch thick and nine inches from the edge. It is warranted in every particular.

Price, \$60 00.

FAIRMAN'S UNIVERSAL SCROLL CHUCK.

PRICES.

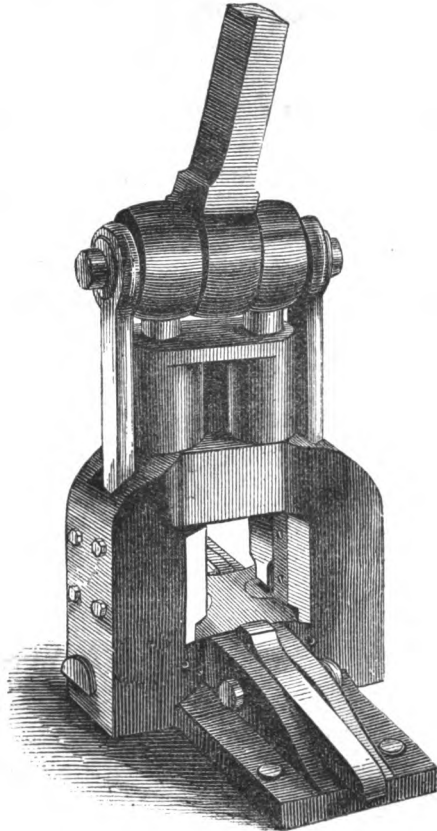
4 inch diameter,	\$10,00
6 " "	15,00
9 " "	20,00
12 " "	25,00
15 " "	30,00
18 " "	35,00
21 " "	50,00
24 " "	65,00

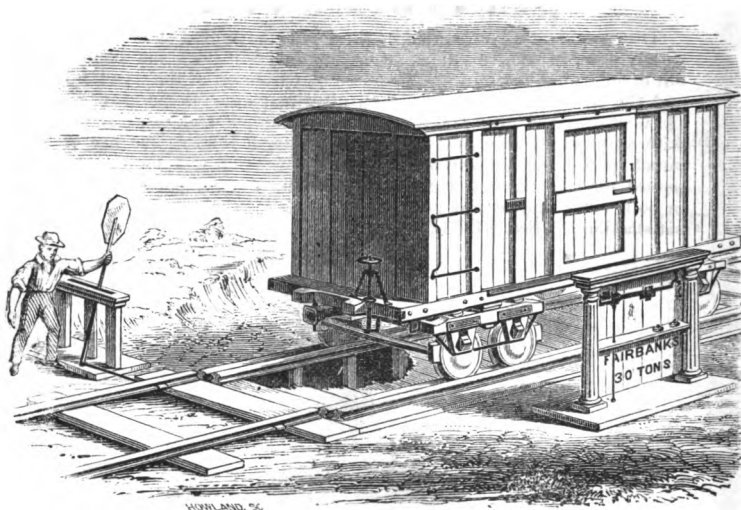
HORTON'S GEARED SCREW CHUCK.

6 inch diameter,	\$20,00
9 " "	25,00
12 " "	30,00
15 " "	35,00
18 " "	40,00
21 " "	50,00
24 " "	65,00
30 " "	100,00

RAIL PUNCH.

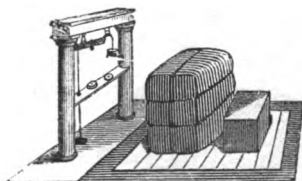
THIS is universally admitted by those who have used it to be superior to any other in use, very light (weighing but 340 lbs.), not liable to get out of order, has twopunches, operated by ONE lever, at the SAME MOMENT, and the power (in comparison with other machines) is IMMENSE, and INCREASES with the RESISTANCE, i. e. a plate one-half inch thick is punched with very nearly the same effort as one-fourth thick. The use of this punch precludes the necessity of turning the rail end for end, it being passed directly through the machine—in its course, punched upon one or both sides, and at any point desired. It is warranted to give perfect satisfaction. Price, \$150.00.





FAIRBANKS' RAILROAD TRACK SCALES.

CAPACITY.	LENGTH OF PLATFORM.	DESCRIPTION OF SCALE.	PRICE.
150 Tons,.....	130 feet,.....	Iron Frame, requiring no vault...	\$2,500
100 ".....	107 ".....	" " "	2,000
75 ".....	96 ".....	" " "	1,800
60 ".....	61 ".....	" " "	1,000
50 ".....	42 ".....	" " "	800
30 ".....	33 ".....	" " "	700
30 ".....	33 ".....	Trussed Levers, requiring vault.	600
20 ".....	23 ".....	" " "	400
18 ".....	16 ".....	" " "	300
10 ".....	12 ".....	" " "	200



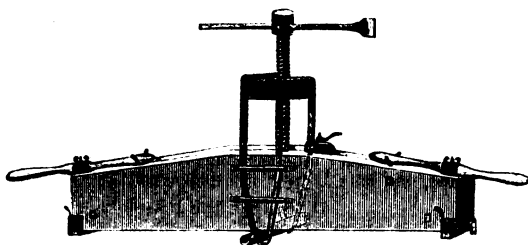
RAILROAD DEPOT SCALES.

CAPACITY.	SIZE OF PLATFORM.	PRICE.
6 Tons,.....	9 by 10 feet,.....	\$200
4 ".....	7 " 9 ".....	175

PILE DRIVERS.

A new and improved Pile Driver, very efficient, simple in arrangement, economical in the consumption of fuel, and easy in transportation. Price, complete, from \$800 to \$1,200.

Williston's Machine for Straightening and Curving Railroad Iron, without drawing the spikes.



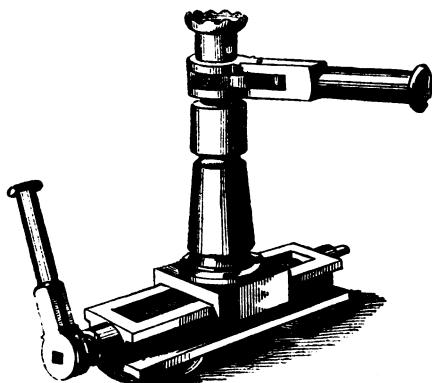
This machine is invaluable for bending or straightening Railroad Iron, Axles, &c. Price \$75.

Seller's Railroad Turn Tables. These Tables are with Parry's Anti-Friction Centre Box, and Bancroft's fitted Patent Self-adjusting Hanger and Pillow-block Bearings.

PRICE—delivered free on board in Philadelphia, with iron work for a covered Pit, \$1,785 \$1,480 \$1,430 \$1,140 \$770

PRICE—delivered free on board without iron work for covering Pit - - - 1,615 1,330 1,283 1,000 665

Ward's Patent Self-centering Turn Table. This Table is constructed upon a new principle, and at a moderate cost. Full particulars furnished by letter.

BURROUGH'S RATCHET JACKS.

The SLIDING OR CARRYING JACK, has been improved by the addition of wheels or plates, which allows it to be turned end for end, thereby avoiding the necessity of letting down the locomotive or car to replace the Jack. This improvement removes the greatest objection to the Carrying Jack, which may now be made light, short and strong. The LIFTING JACK, represented by the *upright part* of the Carrying Jack, is an indispensable article in the stalls, or in case of an accident, as they can always be relied upon being capable of raising forty tons. They are now in use on about one hundred different Rail Roads, and the testimony in their favor is unanimous.

P R I C E S :

Lifting Jacks, 12 inches long, per pair,	\$55 00
“ “ 18 “ “ “	60 00
“ “ 24 “ “ “	65 00
“ “ 36 “ “ “	75 00
Carrying “	do.....140 00
Tender “	do.....25 00 to 50 00

BLASTING MATERIALS

Of every description, including GOMEZ'S PATENT SUBMARINE SAFETY FUSE, warranted to ignite at the rate of one mile in four seconds.

Price, \$4 per 100 feet.

Best English Emery , assorted Nos., per lb.....	\$0 10
Flour of Emery ,	0 06
Emery Cloth , per ream, best quality,	9 00
" Paper , " do. do.	5 00
Sand " " do. do.	2 50
Borax , best refined, per lb.....	0 25
Cotton Waste of any quality furnished at the lowest market price.	
Pick Handles , per dozen.....	2 25
Axe " "	2 00
Blocks for hoisting, of various sizes.	
Crow and Spike Bars , best, with steel points, per lb..	0 7
Letters for Pattern Makers, all sizes.	
Nails , wrought, per lb.....	0 6
" cut, best brands, per keg.	3 50
" finishing, per lb.....	0 8
Shovels , cast steel, best brands, per doz.....	10 00
Axes , best quality, per doz.....	12 00

PORTABLE CIRCULAR SAW MILLS,

With 48 inch Saws, 12 feet Carriage, and 24 feet Ways, complete, with head blocks, ready for work (without belting.)

Price, \$450. Additional length of Carriage, \$3 per foot.

Boiler and Steam Pipe Felting,

warranted to stand a greater heat than any in use, sold in sheets of varied thicknesses. $\frac{3}{8}$ inch, 4c. per square foot; $\frac{5}{8}$ inch, 6c.; 1 inch, 7c.; $1\frac{1}{4}$ inch, 9c.

Boiler Incrustation Eradicator,

warranted to give perfect satisfaction in all particulars, and not to injure the boiler. Price, per lb. 35c.

Fan Blowers.

ALDENS' and MASON'S manufacture. CYLINDER BLOWERS, and all other descriptions of FAN BLOWERS, are fast giving place to these, for Foundries and Smith Shops.

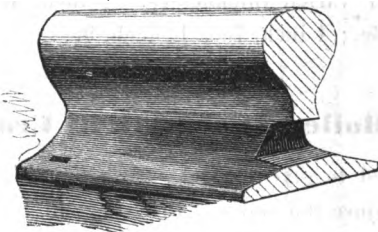
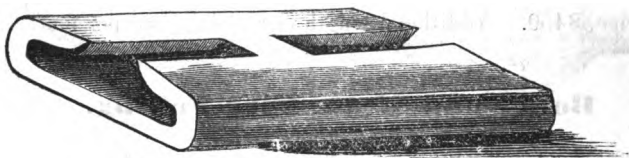
ALDEN'S.

MASON'S.

Diam.	SIZE OF PULLEYS.		Weight.	Price.	Diam.	SIZE OF PULLEYS.		Weight.	Price.
	Diam.	Face.				Diam.	Face.		
In.	In.	In.	Lbs.		In.	In.	In.	Lbs.	
14	2	2	75	\$30	19	3 $\frac{1}{2}$	3 $\frac{1}{2}$	270	\$45
18	3	3	125	60	22	4	4	450	55
24	4	4	200	90	26	6	4 $\frac{1}{2}$	700	65
30	6	6	400	112	30	6	4 $\frac{1}{2}$	850	75
36	8	8	600	140					
42	10	10	950	190					
48	11	11	1300	240					

TWO PULLEYS ON THIS BLOWER.

BISHOP'S IMPROVED RAIL ROAD CHAIR.



This Chair may be made of wrought or cast iron. The lips being joined in the center, forming a bridge for the reception of the slots in the end of the rail, rendering it impossible for them to become depressed—answers all the purpose of a continuous rail, and saves twenty per cent. in the running expenses. Weighs only 10 pounds of wrought and 17 pounds of cast iron.

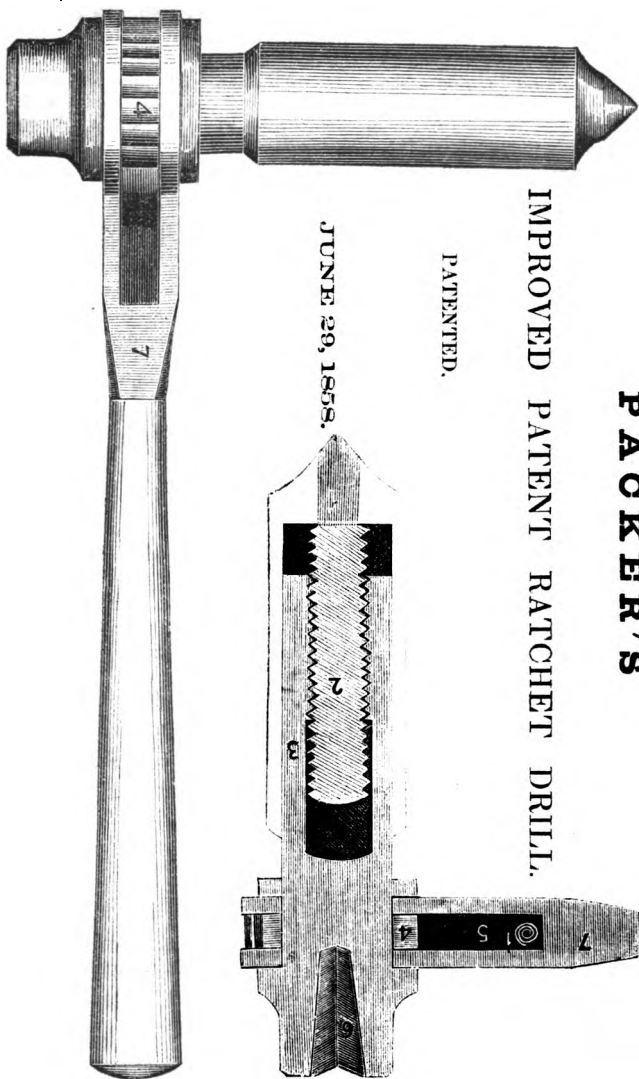
The Chair is placed *between* the ties, the latter being only 8 inches apart, thereby giving a bearing of 24 inches at the joint—16 inches more than if the Chair is placed *on* a tie. Saves \$25 a mile a year in *breaking of chairs*; and all lamination of ends of rails after five year's use.

PACKER'S

IMPROVED PATENT RATCHET DRILL.

PATENTED.

JUNE 29, 1868.



(See next page.

In presenting this Ratchet to the public, we are confident that it will prove more durable and give better satisfaction than any in use.

The peculiar combination of the outside barrel with the screw barrel (3), its internal screw thread and the male screw (2) effectually protect the screw from all dust, or other injurious matter,—these portions of the machine being those which first give way, generally in consequence of the dust which gets in the threads of their screws, grinding them away, and thus rendering them inoperative.

Every Drill is manufactured in the best manner, with steel screws and ratchet, warranted perfect in every respect.

We beg leave to call your attention to the following testimonials :

[From Superintendent of Machinery Office, Navy Yard.]

Boston, Sept. 2d, 1858.

H. H. PACKER, Esq. : Sir,—I have used your Ratchet Drills for the past three or four months, and consider them superior to any other drill that I have used. Yours respectfully,

SETH WILMARTH, Sup't Machinery.

Boston, Sept. 3d, 1858.

Mr. H. H. PACKER : Dear Sir,—Having examined and tested your Patent Ratchet Drill, we pronounce it the most perfect thing of the kind we have ever seen, and cheerfully recommend it to any in want.

We remain, respectfully yours,

DENIO & ROBERTS.

South Boston, Sept. 3, 1858.

We have had the above named Ratchets in use, and consider them the best of any with which we are acquainted.

ISAAC ADAMS.

Charlestown, Mass., Sept. 2d, 1858.

H. H. PACKER, Esq. : Dear Sir,—We have examined the Ratchet Drill patented by you, and can recommend it as the best article for the purpose which has ever come under our observation.

Yours truly,

HITTENGER, COOK & CO., Machinists.

[From Z. E. Coffin, manufacturer of machinery for Charlestown N. Yard.]

Boston, Sept. 3d, 1858.

Mr. H. H. PACKER : Dear Sir,—In answer to your inquiry I have to say that I have used your Patent Ratchet Wrench some three months, and that, in my opinion, it is the best Wrench now in use.

Yours truly,

Z. E. COFFIN.

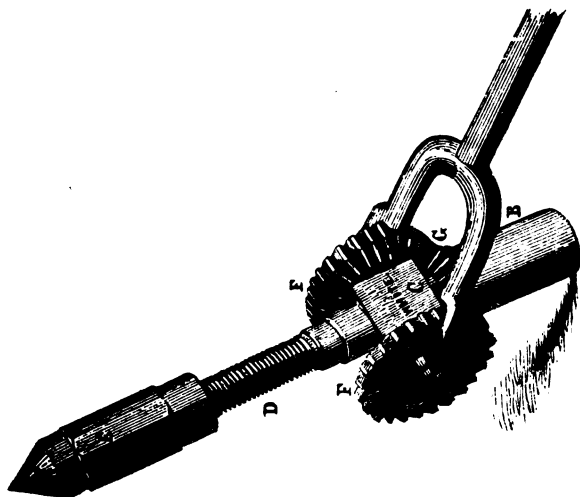
East Boston, Sept. 11th, 1858.

H. H. PACKER : Sir,—I have used your Ratchet Drill Stocks for the last fifteen months, and must say that I think they are the best now in use. Yours truly,

LOUIS OSBORN, Machinist, Marginal St.

P R I C E S :

No. 1—10 inch Handle, each, \$7 50	No. 4—17 inch Handle, each \$12 50
No. 2—12 " " " 9 00	No. 5—20 " " " 15 00
No. 3—14 " " " 10 50	[One Drill will fit every size.]

WHITE'S RATCHET DRILL.

This Drill possesses superior advantages to any other for hand drilling. It not only has a constant rotating motion, as the handle is moved up and down with the drill, but also has the horizontal or lateral motion known to the ordinary ratchet drill, with this addition, that the handle is not confined in working to a RIGHT ANGLE with the drill, but can be used on any ANGLE that circumstances require. Price \$8.

Common Pattern of Ratchet Drill with

12 inch handle, each	\$5 00
14 " " "	6 00
20 " " "	8 00

4*

INDIA RUBBER AND GUTTA PERCHA MACHINE BELTING,

Of very superior quality, warranted better than leather at less cost. These Belts are not affected by cold or heat, run straight, and with a perfect bearing on the pulleys, and seldom require tightening more than once. The Gutta Percha Belt has the additional advantage of working as a cross belt.

Scale of Prices, 3 and 4 ply, from which an estimate of the price of intermediate widths can be made.

2 inch, 3 ply, foot.....	10 cents.	4 ply, per foot.....	13 cents.
3 " " " ".....	15 "	" " " ".....	17 "
4 " " " ".....	20 "	" " " ".....	24 "
5 " " " ".....	24 "	" " " ".....	30 "
6 " " " ".....	29 "	" " " ".....	36 "
7 " " " ".....	34 "	" " " ".....	41 "
8 " " " ".....	38 "	" " " ".....	47 "
9 " " " ".....	45 "	" " " ".....	58 "
10 " " " ".....	54 "	" " " ".....	69 "
11 " " " ".....	60 "	" " " ".....	75 "
12 " " " ".....	66 "	" " " ".....	83 "
13 " " " ".....	72 "	" " " ".....	92 "
14 " " " ".....	81 "	" " " ".....	100 "
15 " " " ".....	86 "	" " " ".....	107 "
16 " " " ".....	92 "	" " " ".....	115 "
18 " " " ".....	104 "	" " " ".....	130 "
20 " " " ".....	115 "	" " " ".....	144 "
22 " " " ".....	127 "	" " " ".....	158 "
24 " " " ".....	138 "	" " " ".....	173 "

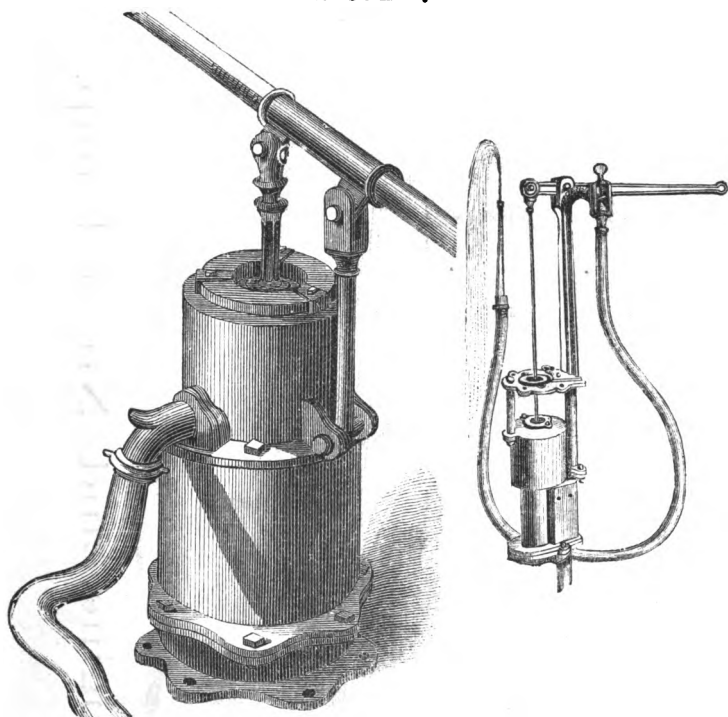
Premium Oak Tanned Leather Belting.

CASH PRICES PER RUNNING FOOT.

1 inch,.....	6 cts.	11 inch,.....	86 cts.	21 inch,.....	1 90 cts.
2 ".....	12 "	12 ".....	96 "	22 ".....	2 02 "
3 ".....	20 "	13 ".....	1 06 "	23 ".....	2 14 "
4 ".....	28 "	14 ".....	1 16 "	24 ".....	2 26 "
5 ".....	36 "	15 ".....	1 26 "	/	
6 ".....	44 "	16 ".....	1 36 "		
7 ".....	52 "	17 ".....	1 46 "	ROUND BANDS.	
8 ".....	60 "	18 ".....	1 56 "		
9 ".....	68 "	19 ".....	1 66 "		
10 ".....	76 "	20 ".....	1 78 "		
				$\frac{1}{4}$ in. 8 cts	$\frac{3}{4}$ in 16 cts.
				$\frac{3}{8}$ " 10 "	$\frac{3}{4}$ " 20 "
				$\frac{1}{2}$ " 12 $\frac{1}{2}$ "	1 " 28 "

Intermediate widths at proportionate prices. Bands without Rivets 5 per cent. less. Double Bands, double the price of Single. Hemlock Bands 20 per cent. less than Oak.

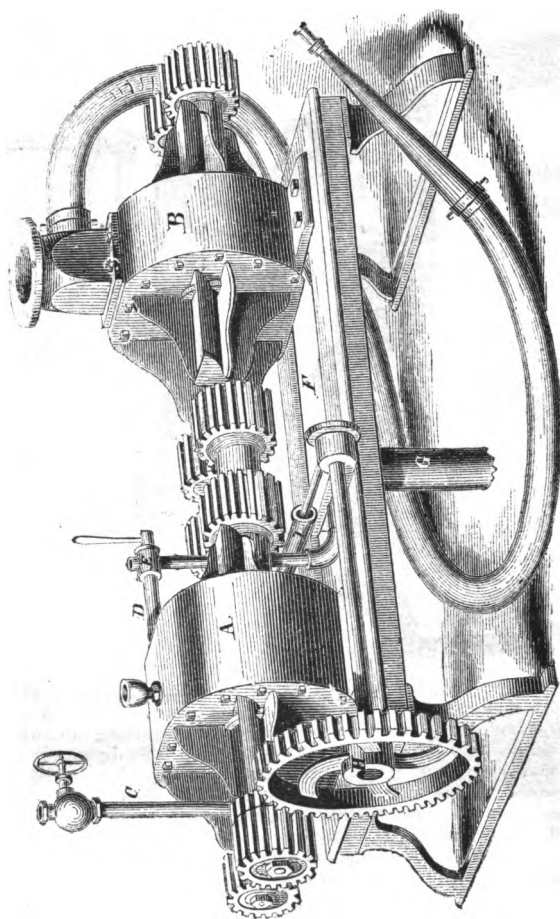
WEST'S IMPROVED LIFT AND FORCE PUMP.



This Pump is commended for its extreme simplicity of construction, great strength and consequent durability, and cheapness of repair. It has but two valves, is perfectly double-acting, has no stuffing box, which is a great improvement, as stuffing is so liable to be deranged, and leak under a strong pressure, to say nothing of the great loss by friction incident thereto. It has also two air-chambers—the one as before mentioned, surrounding the upper cylinder, the other surrounding the lower cylinder; thus the action of the valves is cushioned upon both sides by air—preventing water-hammer and vacuum thump, and enabling a much smaller and less expensive pipe to supply the pump.

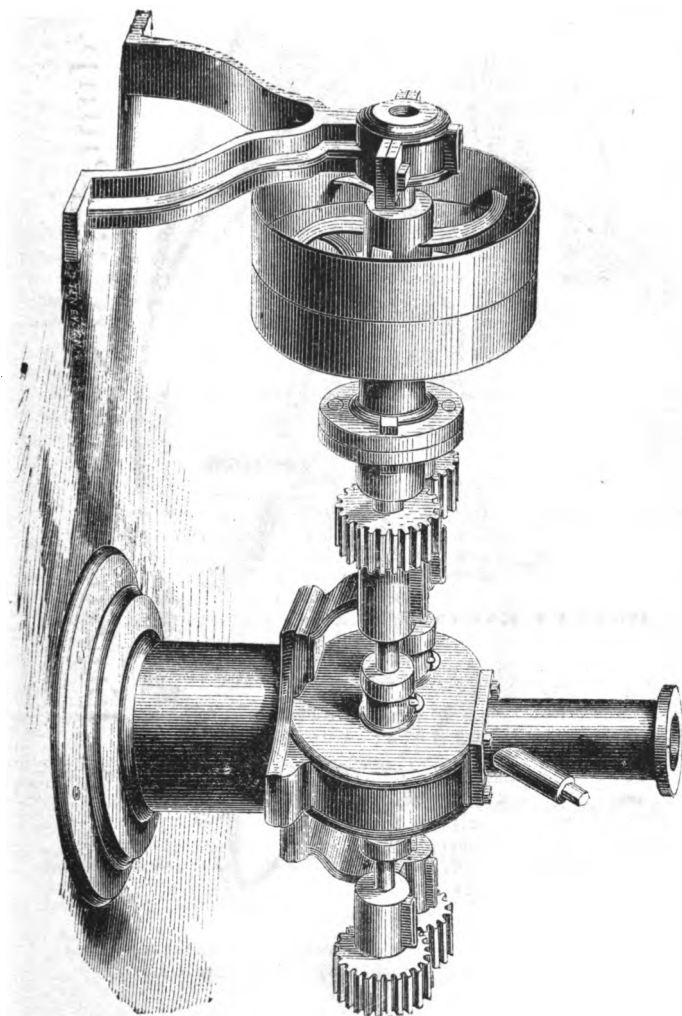
PRICES :

2 in. throw 5 gallons per minute	\$12	4 in. throw 30 gall's pr min't hvy	\$35
3 " " 20 " " "	20	6 " " 60 " " "	60
4 " " 30 " " "	25		

**HOLLY'S PATENT ELIPTICAL RO-
TARY PUMPS AND ENGINE.**

No. 4 Engine, and No. 3 Pump.

No. 2 POWER PUMP,
With Counter-shaft and Pulleys—Double Geared.
[See capacity, prices, &c., next page.]



PRICE LIST FOR HOLLYS' PATENT ROTARY PUMPS AND ENGINES.

Garden Engine Pumps	\$10 00
Cistern Pumps	10 00
Garden Engines	18 00
No. 2 Ship and Railroad Hand Pumps	40 00
No. 1 Power Pump, with counter shaft, pulleys and standard for bearing outside of pulleys, double geared	45 00
No. 2 do do do do do	65 00
No. 3 do do do do do	100 00
No. 4 do on square frame, double geared, with couplings very strong,	150 00
No. 5 do do with 24 in. mandrels & couplings, (extra)	185 00
do counter shaft and pulleys with standard for outside bearings	
do do do do do	for No. 4 12 00
do do do do do	do No. 5 15 00
No. 6 do on square frame, double geared with couplings, (3 in. cast steel mandrels)	300 00
do do do (3¼ in. do)	450 00

FIRE PUMPS

No. 4 do on iron plate, double geared, with coupling, air chamber and take-off for two streams	\$135 00
No. 5 do do do four do	160 00

STEAM PUMPS.

Railroad and Ship Steam Pump, No. 3 Engine and No. 2 Pump, on iron frame, with Boiler Feed-Pump and condenser attached	\$275 00
do No. 4 Engine and No. 3 Pump	400 00
do No. 5 do No. 4 do	500 00
do No. 6 do No. 4 do fire protection (no condenser)	550 00
No. 1 DONKEY ENGINES for from 30 to 50 horse boiler	100 00
No. 1 do do with condenser, finished	125 00

CAPACITY OF HOLLYS' PATENT ROTARY PUMPS.

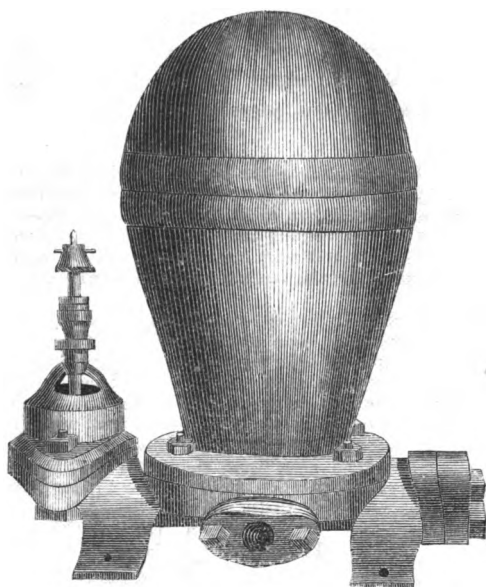
no. 1, 24 cubic inches = 1-9 gallon each revolution, speed 175 to 200 per minute.	
" 2, 57 " = ¼ " " " 150 to 175 "	
" 3, 120 " = ½ " " " 100 to 125 "	
" 4, 288 " = 1¼ " " " 80 to 100 "	
" 5, 495 " = 2 1-7 " " " 70 to 90 "	
" 6, 996 " = 4½ " " " 60 to 75 "	
" 7, 1660 " = 7 1-5 " " " 40 to 60 "	

The above is about the proper speed for constant service, but may be increased when necessary.

FIRE PUMPS.

No. 4, 288 cubic inches = 1¼ gallon each revolution, speed 300 to 350 per minute.	
" 5, 495 " = 2 1-7 " " " 200 to 250 "	

PATENT PREMIUM MEDAL HYDRAULIC RAMS.



No. 2.	of suitable capacity for a Spring or Brook which furnishes	
	from 3 quarts to 2 gallons per minute, per dozen.....	\$75 00
" 3.	from 1½ to 4 gallons per minute, per dozen.....	90 00
" 4.	from 3 to 7 gallons per minute, per dozen.....	120 00
" 5.	from 6 to 14 gallons per minute, per doz.....	180 00
" 6.	from 12 to 25 gallons per minute, per dozen.....	350 00
" 10.	from 25 to 75 gallons, per minute, each.....	120 00

Patent Bored Wooden Pump Tubing, Water Leaders, Aqueduct and Drain Pipes of various sizes.

ALSO,

Wycoff's Machine for Boring the same.

PALMER'S ROTARY HYDRAULIC PUMP.

This most simple and durable Pump is of very recent invention, and is particularly adapted to supplying water for Railroad Stations, &c. Annexed is a specimen of a very large number of certificates in our possession :

BUFFALO, Nov. 3, 1858.

DEAR SIR:—We have carefully examined the mechanical construction and movement of your Rotary Hydraulic Pump, and having witnessed its operations, have no hesitation in saying that in all those qualities desirable in devices for overcoming the specific gravity of fluids, yours, in our opinion, far excels and fully answers all the objections which have heretofore proved so constant an annoyance to all who are compelled to use Pumps.

The extreme simplicity of your device, although combining the principle of the screw or inclined plain in its action upon the fluid, and the arrangement which compensates for all wear, rendering the Pump always tight, combined with the entire absence of all valves and packing, together with its compactness of form and size, will prove in the estimation of the public a far greater certificate of its merits than would any testimonial upon paper, which we could give you. We, however, cheerfully and confidentially recommend it as being the best Pump that has ever come under our observation, and believe it superior to any thing of the kind in use.

Very truly, yours,

(Signed.)

J. N. TIFT & CO.,

Proprietors Buffalo Steam Engine Works.

(Extract from the Cincinnati Gazette, dated September 30, 1858.)

PALMER'S PUMP.—At a trial of the various Pumps at the Industrial Exhibition yesterday, the Hydraulic Force Pump, patented by Captain O. Palmer, carried the day against all competition.

BROOKLYN, N. Y. May, 15, 1858.

For pumping muddy water, draining marshy lands, &c., we think these Pumps unsurpassed and unsurpassable, as they will raise and discharge mud, gravel, quick-sand and the like in any quantities, if there is enough water with it to take suction.

In our operations here fully one-half the volume discharged has been gravel and sand.

(Signed.)

FARWELL & POTTER,

Contractors of Brooklyn Water Works.

PRICES :

2 inch Hand Pump		\$36 75
2½ " Power Pump		63 00
3 " " "		84 00
4½ " " "		131 75
6 " " "		262 50

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EAGLE MOULDING MACHINE.

**A NEWLY INVENTED AND SUPERIOR MACHINE, DESIGNED FOR
CUTTING ALL THE VARIOUS REGULAR AND IRREGULAR FORMS REQUIRED IN WOOD.**

This MACHINE is calculated to perform work that can be done by NO OTHER MACHINE NOW IN USE, combining all the advantages of all other Machines capable of Cutting STRAIGHT MOULDINGS, and also the most IRREGULAR FORMS and WARP SURFACES. First—The arbors are made adjustable so as to be thrown on an inclined position, which is absolutely necessary in planing warp surfaces and of very great importance in cutting beveled work with straight cutters. This arrangement is so simple in its construction that they can readily be set to any degree of accuracy, by turning a screw which holds them in any position required. Second—The heads are made independent of the arbors, so that any size or number of head can be used without disturbing the arbors, one set of arbors only being required for the Machine. Third—The cutter heads are made with a guard over the cutters, which prevents any liability of the hands of the operator coming in contact with the cutters while working the machine. Fourth—The cutter head is made of such peculiar form as to make a complete cap or double iron, which is indispensable for planing cross-grained hard wood. Fifth—The corners can easily be made of plain steel, and are held in the head by side instead of end pressure, consequently they can be used with wide cutters without the least tremble. Sixth—The guide being stationary, which does not allow of friction on the pattern.

**THIS MACHINE WILL DO THE WORK OF THIRTY OR FORTY MEN AND
BETTER EVEN THAN CAN BE DONE BY HAND LABOR.**

PRICE: \$1,00 to \$2,00, including the right to use the same.

The following testimonial will be recognized as coming from the most extensive manufacturer of Furniture in this country.

Boston, June 6th, 1859.

MR. H. D. STOVER: Dear Sir,—Having used one of your "EAGLE MOULDING MACHINES," for the past five months or more, during which time we have had an opportunity of testing its merits, and of satisfying ourselves of its ability to accomplish such kinds or parts of work for which it was designed. It gives us great pleasure to be able to say to you that its operation has far exceeded our most sanguine expectations, as it does all that has been claimed for it, in such a smooth and perfect manner, as to excite the wonder and admiration of every one at all familiar with the difficulty heretofore attending upon the execution of such kind of work.

We have run the machine nearly every day since we have had it, and find it so great a convenience, and gives us such a manifest advantage in the manufacture of our furniture, that we presume we shall continue to run it as long as we have any use for machinery.

We congratulate you on the successful result of your labor in this respect, and sincerely hope that you may eventually reap the reward to which we think your inventive genius justly entitles you.

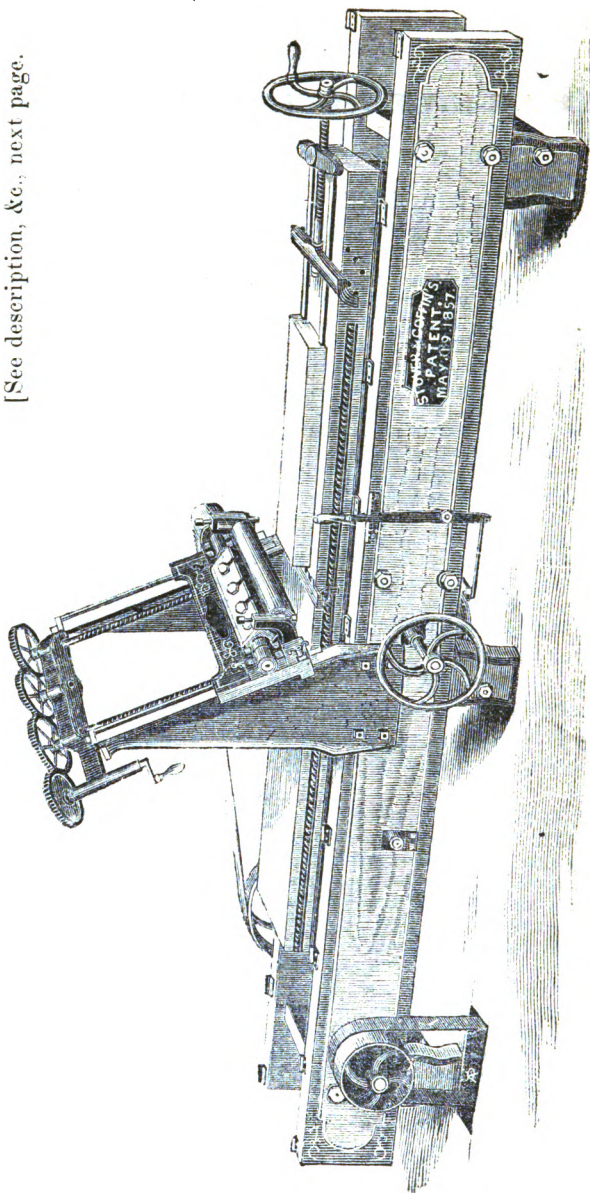
Respectfully yours,

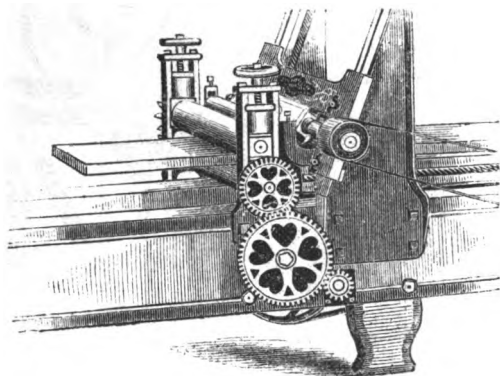
J. E. DANIELS & CO

PATENT PLANING MACHINE,

For Planing Straight and out of Wind.

[See description, &c., next page.



PATENT PLANING MACHINE,

AS SEEN WITH THE FEED ROLLS IN OPERATION.

This Planer works with Cylindrical Revolving Cutters, like those used in the celebrated Woodworth Machines, and are designed principally for planing straight and out of wind, making a complete combination of all the Planing Machines now in use. They are now being rapidly introduced throughout the United States and Europe, and we are prepared to give the testimony of many of the most respectable mechanics in the country, for their superiority over any Planing Machine now in use. The following are among the advantages of this Machine, over any other: First—The cutter head is so constructed as to form a complete heel or double iron, which is **INDISPENSABLE** for planing cross-grained hard or soft wood. Second—It will plane **THREE TIMES AS FAST** as any other machine now in use which planes straight and out of wind, and leaves the surface smoother and the corners perfectly square. Third—The dogging arrangement is so constructed that with one motion you can dog any length stuff firmly to the platten. Fourth—Much less time is required to keep the cutters in order. Fifth—It is much more compact and simple in its arrangement, and being made entirely of iron above the platten, is not affected by the weather. Any one wishing a Planing Machine, has but to see this to admit its superiority over any in use.

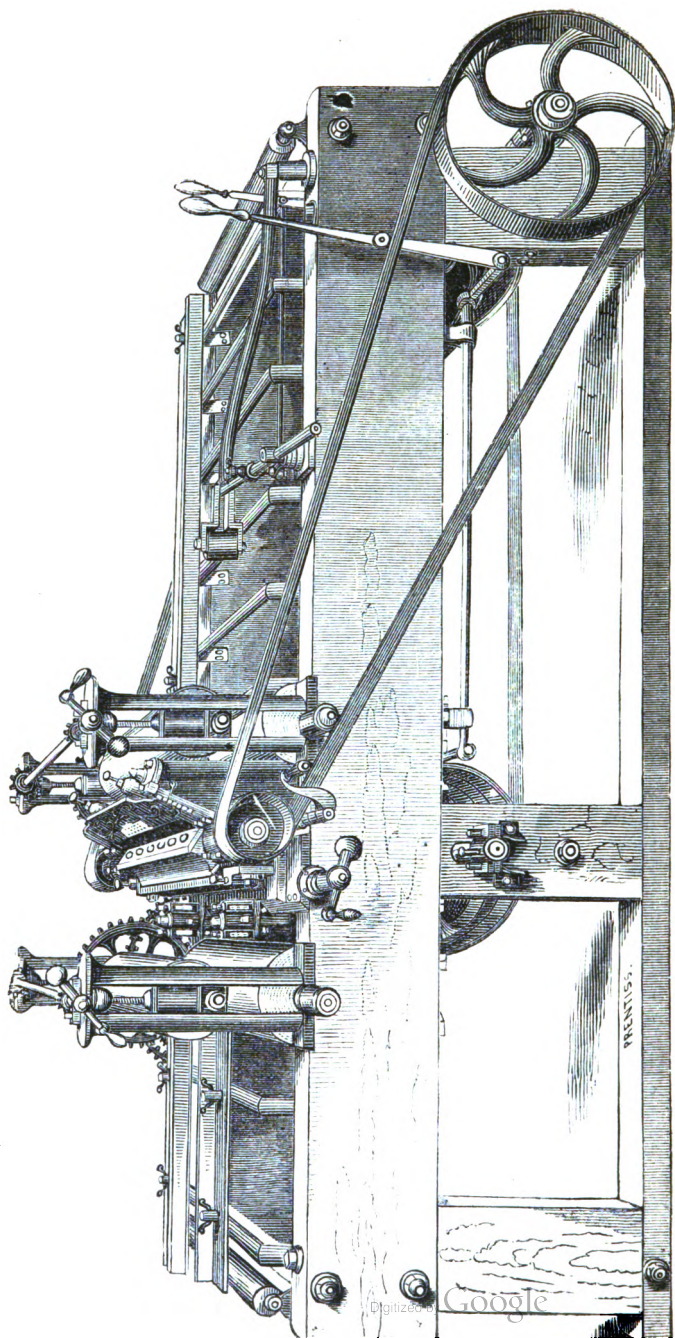
PRICES :

To Plane 8 feet long, 20 inches wide,	\$210,	24 inch wide,	\$240
" 12 " " "	250	" " "	280
" 16 " " "	282	" " "	318
" 20 " " "	312		

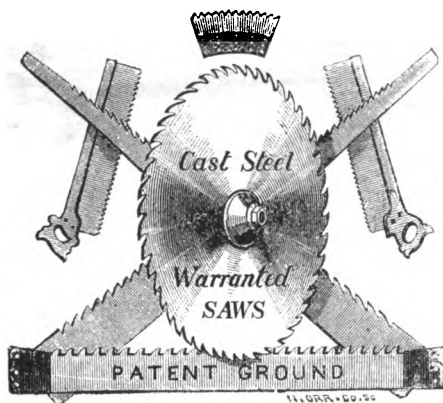
Eight dollars per foot for every additional foot in length. Cost of feed Rolls, when ordered, \$30 to \$50.

When the Machines are ordered to be belted, an extra charge will be made for the belting, according to the cost. Fifteen dollars extra when the Machines are built for two driving belts.

Boxing 5 to 10 dollars. Extra cutters, 5 dollars per set. These prices include the right to use the same.



WOODWORTH'S PLANING MACHINE,
WITH FITT'S IMPROVED FEED-WORK.

S A W S .

**WARRANTED EXTRA CAST STEEL
CIRCULAR SAWS HARDENED,
TEMPERED AND PATENT-
GROUND.**

10 inch diameter	\$2 17 each.
12 " " " " " " " "	2 67 "
14 " " " " " " " "	3 33 "
16 " " " " " " " "	4 00 "
18 " " " " " " " "	5 00 "
20 " " " " " " " "	6 00 "
22 " " " " " " " "	7 00 "
24 " " " " " " " "	8 00 "
26 " " " " " " " "	9 33 "
28 " " " " " " " "	11 00 "
30 " " " " " " " "	12 67 "
32 " " " " " " " "	14 67 "
34 " " " " " " " "	17 33 "
36 " " " " " " " "	20 00 "
38 " " " " " " " "	25 00 "

**WARRANTED TENON AND CROSS
CUT SAWS, EXTRA TEMPERED. □**

4½ feet.....	\$3 00 each.
5 " " " " " " " "	3 38 "
5½ " " " " " " " "	3 75 "
6 " " " " " " " "	4 13 "
6½ " " " " " " " "	4 50 "
7 " " " " " " " "	4 88 "
7½ " " " " " " " "	5 63 "
8 " " " " " " " "	6 75 "

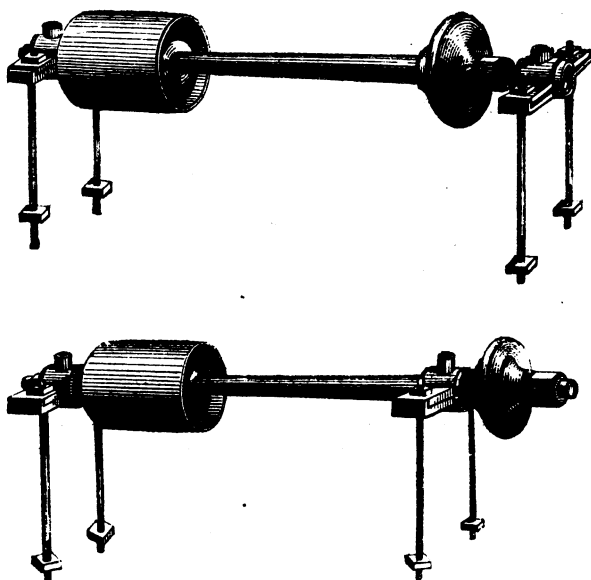
SCROLL SAWS.

16 inch.....	\$5 25 doz.
18 " " " " " " " "	5 63 "
20 " " " " " " " "	6 75 "
22 " " " " " " " "	7 50 "
24 " " " " " " " "	9 00 "
26 " " " " " " " "	10 13 "
28 " " " " " " " "	11 25 "
30 " " " " " " " "	12 00 "

**Extra Tempered and Patent Ground warranted Cast Steel
Mill-Saws, \$1 per foot.**

MANDRELS FOR CIRCULAR SAWS,

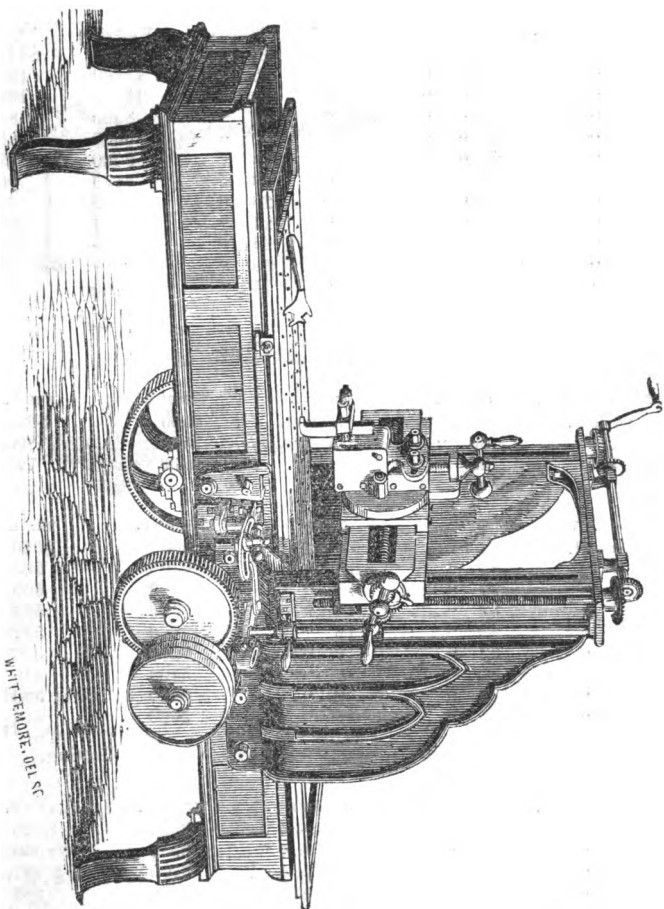
WARRANTED PERFECTLY TRUE, WITH BRASS BOXES, BOLTS, AND NUTS.



This pattern is arranged for the flanch to run outside the boxes, as the saw can then be removed without shifting the mandrel from its bearings.

DIMENSIONS OF MANDRELS FOR SAWS.

Sizes of Saws.	Hole in Saw.	Price Each.
1.... 7 to 12 inch.....	1 inch.....	\$12 00
2.... 14 to 18 ".....	1 $\frac{1}{4}$ ".....	15 00
3.... 20 to 24 ".....	1 $\frac{3}{8}$ ".....	20 00
4.... 26 to 28 ".....	1 $\frac{1}{2}$ ".....	22 50
5.... 30 to 26 ".....	1 $\frac{5}{8}$ ".....	27 50
6.... 38 to 44 ".....	1 $\frac{3}{4}$ ".....	35 00

IRON MACHINERY.

Cut of 8 feet Planer—Planes 6½ feet long, 24 by 24 inches.

(See prices next page.)

WHITTEMORE, DEL. SC

In addition to the Machinery illustrated, I am prepared to contract for furnishing on the most liberal terms every description of Tools, &c., for Machine-shop use. Being a Practical Machinist of ten years experience, I am confident my customers will find it to their advantage to confer with me before purchasing elsewhere.

Prices of Improved Planing Machines.

LENGTH OF WAY.	PLANES.	WIDTH	HEIGHT.	WEIGHT.	PRICE.
20 feet	16 feet long.	42 inch.	42 inch.	14000	\$1400
16 "	12 " "	42 "	42 "	11400	1200
16 "	12 " "	36 "	30 "	10800	1000
12 " 8 inch	10 " "	36 "	30 "	8000	800
12 "	9 " "	30 "	30 "	6500	600
10 "	8 " "	30 "	28 "	5000	525
9 "	7 1-2 " "	30 "	28 "	4800	500
8 "	6 " "	30 "	28 "	4200	475
8 "	6 " "	24 "	24 "	3500	400
6 "	5 " "	24 "	24 "	3000	350
5 "	4 " "	20 "	19 "	1900	300
3½ " hand.	2½ " "	14 "	14 "	600	130

Engine Lathes.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
20 feet.	40 inch.	15 feet.	8500	\$900
16 "	40 "	11 "	7500	800
16 "	36 "	11 "	6600	725

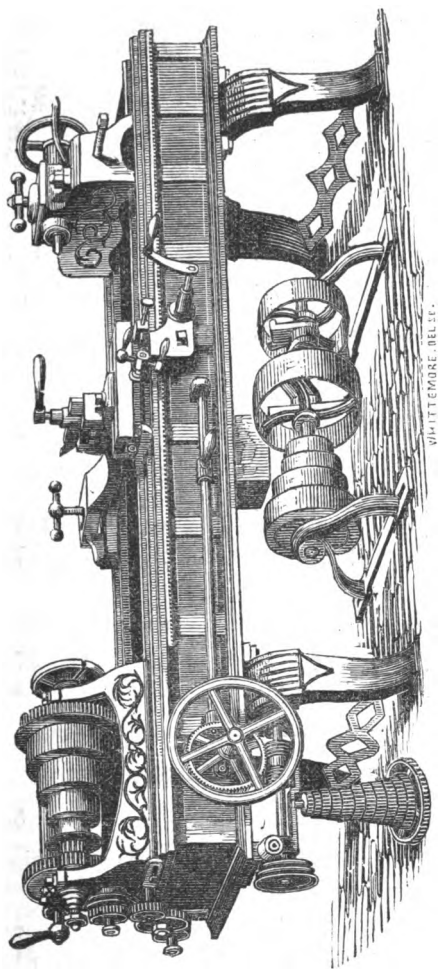
LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
20 feet.	32 inch.	16 feet.	6600	\$640
19 "	32 "	15 "	6400	625
18 "	32 "	14 "	6200	609
17 "	32 "	13 "	6000	593
16 "	32 "	12 "	5800	577
15 "	32 "	11 "	5600	562
14 "	32 "	10 "	5400	546
13 "	32 "	9 "	5200	530
12 "	32 "	8 "	5000	514

The above Lathes are Gib Rests, Screw Feed, and Screw Cutting.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
15 feet	24 inch.	12 feet 4 in.	3500	\$320
14 "	24 "	11 feet 4 in.	3350	309
13 "	24 "	10 feet 4 in.	3200	292
12 "	24 "	9 feet 4 in.	3050	280
11 "	24 "	8 feet 4 in.	2900	268
10 "	24 "	7 feet 4 in.	2750	257
9 "	24 "	6 feet 4 in.	2600	247
8 "	24 "	5 feet 4 in.	2450	237

Add for Screw Gear \$45 to \$75.

[Continued page 96.]



Cut of 10 foot Lathe—Swing 22 inches.

The above cut illustrates the style of *light* Lathes to which the accompanying list refers. All Lathes weighing 5000 pounds and upwards have gib rests.

[See prices, next page.

ENGINE LATHES.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
13 ft.	22 in.	10 ft. 4 in.	2900	\$270
12 ft.	22 in.	9 ft. 4 in.	2800	258
11 ft.	22 in.	8 ft. 4 in.	2700	246
10 ft.	22 in.	7 ft. 4 in.	2600	236
9 ft.	22 in.	6 ft. 4 in.	2500	226
8 ft.	22 in.	5 ft. 4 in.	2400	218

Add for Screw Gear \$45 to \$60.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
10 ft.	20 in.	7 ft. 3 in.	2000	\$221
9 ft.	20 in.	6 ft. 3 in.	1900	215
8 ft.	20 in.	5 ft. 3 in.	1800	210
7 ft.	20 in.	4 ft. 3 in.	1700	199
6 ft.	20 in.	3 ft. 3 in.	1600	194
5 ft.	20 in.	2 ft. 3 in.	1500	188

Add for Screw Gear \$30 to \$40.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
8 ft.	18 in.	5 ft. 8 in.	1500	\$180
7 ft.	18 in.	4 ft. 8 in.	1400	170
6 ft.	18 in.	3 ft. 8 in.	1300	165
5 ft.	18 in.	2 ft. 8 in.	1200	160

Add for Screw Gear \$30.

LENGTH OF WAY.	SWING.	TURNS.	WEIGHT.	PRICE.
Not Back Geared } 5 ft.	18 in.	2 ft. 10 in.	1100	\$140
	4 ft.	1 ft. 10 in.	1000	135

Polishing or Hand Lathes.4 ft. 6 in. long, and to swing 12 in. \$54

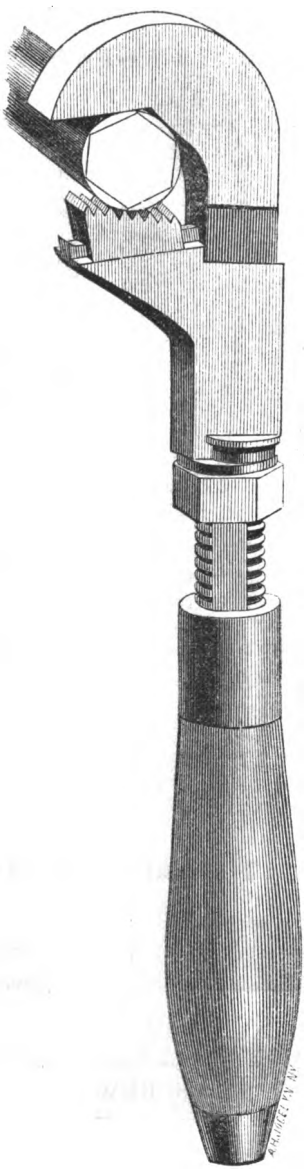
In the above prices for Lathes and Planers, are included Counter Shafts and Hangers. If boxed, an extra charge will be made.

WOOD LATHE HEADS, for 24 in. Swing. \$75UPRIGHT DRILLS (weight 900 lbs.), \$116

SCROLL AND SCREW CHUCKS.

[See page 66.]

PHILIP'S GRIPPING WRENCH,



PATENTED MAY 3, 1859.

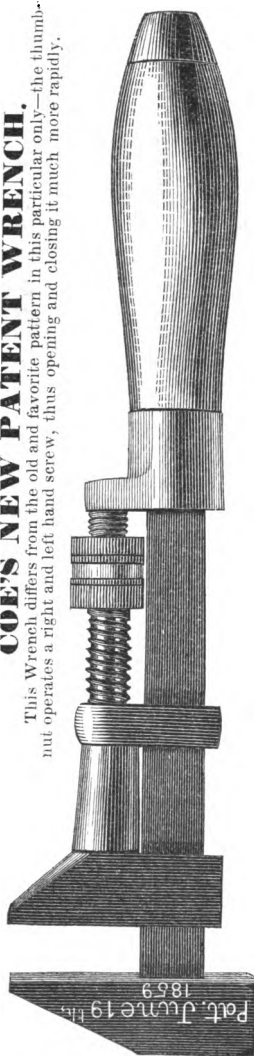
The Patentee of this Wrench during an experience of twenty years, as a practical machinist, has often felt the need of such a tool, and confidently believes that it will be approved by every machinist in the country, for the purpose of turning and holding Stud Bolts, Gas Pipes and other Round Articles, Square and Six-square Nuts, after the corners are worn off.

PRICES PER DOZEN.

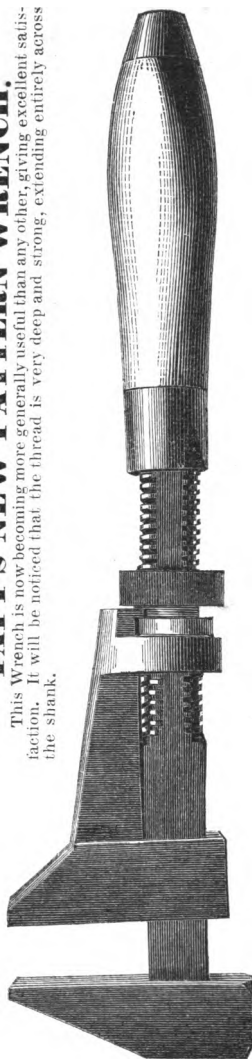
BLACK.			
9 inch Wrench,	.....	\$12 00	
12 " "	.....	18 00	
16 " "	.....	23 00	
19 " "	.....	28 00	
24 " "	.....	39 00	
		BRIGHT.	
	9 inch Wrench,	.....	\$14 00
	12 " "	.....	20 00
	16 " "	.....	25 00
	19 " "	.....	30 00
	24 " "	.....	41 00

COE'S NEW PATENT WRENCH.

This Wrench differs from the old and favorite pattern in this particular only—the thumb-nut operates a right and left hand screw, thus opening and closing it much more rapidly.

**TATT'S NEW PATERN WRENCH.**

This Wrench is now becoming more generally useful than any other, giving excellent satisfaction. It will be noticed that the thread is very deep and strong, extending entirely across the shank.

**PRICES OF WRENCHES, PER DOZEN.**

COE'S NEW PATERN.		TATT'S NEW PATERN.	
12 inch black.	\$12 00	12 inch black.	\$10 00
15 " "	22 00	15 " "	30 00
12 " bright.	14 00	12 " bright.	12 00
15 " "	24 00	15 " "	22 00

QUEEN'S PATENT PORTABLE FORGE AND BELLOWS.



The above Engraving shows a few of the many different positions in which the Slides can be set, to protect the fire from Wind or Rain, when in use out-doors, or for safety and other purposes in-doors.

No. 1 represents the Forge entirely closed ; No. 2, as partly closed, and No. 3, as open.

NOS.	PRICE.	WEIGHT.	DIAMETER.	HEIGHT.
1	\$25.00	185 lbs.	2 ft.	4 ft. 4 in.
1½	30.00	230 "	2 " 3 in.	4 " 4 "
2	35.00	325 "	2 " 6 "	4 " 8 "
3	45.00	437 "	3 "	4 " 9 "

ANVILS.

Armitage's Mouse Hole.....	per lb.....	13 cts.
Star.....	"	8 "
Eagle	"	8 "
Cast Steel Sledges.....	"	25 "
Sledge Handles.....	per doz.....	\$1.50

VICES.

	Per lb.	Weight.
Wilson's Solid Brass Box Vice.....	16 cts.....	70 lbs.
" " Iron	15 "	80 "
Burrough's Cast Iron Parallel.....	17 "	80 "
" " "	13 "	200 "

FOUNDRY MATERIALS.

Black Lead Crucibles.....	per No.	0.03½
Iron Wire Riddles.....	per doz.....	\$8.00
Brass “.....	“.....	8.14
Fire Clay.....	per barrel....	1.25
Moulding Sand.....	“.....	1.00
Brass “.....	“.....	1.50
Ground Fire Brick.....	“.....	2 50
Ivory Black.....	“.....	5.00
Stove Polish (Dixon's).....	per lb.	0.05
Shovels.....	per doz.....	12.00
Prepared Facings.....	per lb.	0.02½
Sea Coal.....	per barrel....	2.00
Lehigh Coal.....	“.....	2.00
Charcoal.....	“.....	2 50
Soap Stone.....	“.....	2.50
Ground Fire Clay.....	“.....	1 50
Dry Loom (mixed for use).....	“.....	2.50
Coreing Flour.....	“.....	4.00
Fire Sand.....	“.....	1.25
German Black Lead.....	per lb.	0.07
Prepared “.....	“.....	0.03½
India silvered Black Lead.....	“.....	0.10½

FIRE BRICKS,

For Smelting Furnaces, Iron Foundries, Brass Foundries, Copper Smelters, Bakers' Ovens, Lime and Brick Kilns, Grate Backs, Green Houses, Stove Linings, and all kinds of Furnaces required to stand the most intense heat.

JAMB BRICK.....	per 1000..	\$35.00
CUPOLA BRICK,		
4in. long, 20in. diameter, 24 to circle.		\$20.00
5 “ “ 25 “ “ 24 “		25.00
6 “ “ 26 “ “ 24 “		30.00
7 “ “ 30 “ “ 24 “		35.00
9 “ “ 24 “ “ 24 “		40.00
18 in. d'm. inside, 3 & 4 in. th'k, 8 to circle,		\$14 & 16
20 “ “ 3 & 4 “ “ 8 “		16 & 18
22 “ “ 3 & 4 “ “ 8 “		18 & 20
24 “ “ 3 & 4 “ “ 8 “		20 & 22
26 “ “ “ “ 4 “ “ 8 “		24
28 “ “ “ “ 4 “ “ 8 “		25
BARS or GRATING for Furnaces,		
3 by 4 by 15 in.....		0.25
4 by 4 by 24 in.....		0.75
6 by 6 by 24 in.....		1.00
4 by 5 by 20 in.....		0.50
FURNACE BRICKS,		
12 in.....		0.44
14 in.....		0.37½
CIRCULAR BRICK,		
30 in. d'm. inside, 3 & 4 in. th'k, 8 to circle,		\$28.00
36 “ “ 3 & 4 “ “ 8 “		30.00
48 “ “ “ “ 4 “ “ 9 “		50.00
BRICKS, 10 in. long, 3 by 4..	per 1000,	75.00
FURNACE BLOCK,		
4 by 6 by 8 in.....		0.12½
4 by 6 by 12 in.....		0.18½
4 by 6 by 16 in.....		0.30
4 by 8 by 10 in.....		0.18½
4 by 8 by 16 in.....		0.50
4 by 8 by 20 in.....		0.62½
3 by 8 by 20 in.....		0.50
6 by 6 by 24 in.....		1.00
6 by 10 by 18 in.....		1.00
4 by 32 by 9 in.....		1.25
4 by 18 by 9 in.....		0.62½
4 by 8 by 9 in.....		0.25
5 by 24 by 4 in.....		0.50
6 by 12 by 18 in.....		1.25
8 by 18 by 8 in.....		1.25
8 by 20 by 4 in.....		0.50

ROSENDALE CEMENT,

Extra quality.....per bbl.....\$1.00

WHITE METAL
COMPOSITION
JOURNAL BOXES,

F O R

Locomotive and Tender Trucks, and General Machinery.

I am now prepared to deliver castings from patterns ready for use, at 25 cents per lb., in any part of the United States or Canada, free of all extra charges, such as freight, boxing, carting, insurance, &c.

Having been a practical machinest ten years, and for the past four years engaged in the introduction and manufacture of

WHITE METAL,

I have had an opportunity of obtaining considerable data in regard to, and comparing the various metals in use, and have no hesitation in guaranteeing this equal to any—even the best yellow composition made from copper and tin, and much cheaper in price, and about one-fifth lighter.

It has all the merit of the original "*Firth's Metal*"—as it *wears the journal less, and will not cut it, even if run without oil. It is cast solid, the same as the yellow composition, thus avoiding lining as with Babbit's—and is superior to Firth's—being LESS BRITTLE, and melts at a higher temperature, the principal objections to Firth's.*

A few castings furnished for trial on receipt of patterns.

METALS.

Ingot Copper.
 Lake and Baltimore Copper.
 Spelter—best Silesian.
 Banca Tin.
 Beverly or Straits Tin.
 Lamb and Flay “
 Pig Lead.
 Spelter Solder.
 Antimony,
 Babbitt Metal.
 White Metal, (see page 101).

The above brands of Metal I am prepared to furnish at the lowest market prices.

Old Metal,

Such as Rails, Scrap Copper, Brass, Lead, and general *Machine Shop Scrap Iron*, taken in exchange for new material, on

LIBERAL TERMS.

Best English Cast Steel,.....	per lb...	16 cts.
Spring Steel,.....	“ ..	6¼ “
Frog “	“ ..	10 “
“ Points and Plates to Pattern,..	“ ..	12½ “
Damascus Steel, (see page 103,).....	“ ..	14 “
Boiler and Tank Iron.		
Best Russia Sheet “ for Lagging.		
“ Rolled Sheet Brass “ “		

DAMASCUS STEEL.

I would invite your attention to a very superior article of CAST STEEL, warranted fully equal to the best standard qualities, such as SANDERSONS' & Co., and NAYLOR & Co., with this advantage, of being *uniform in temper throughout* and cheaper, (14 cents per lb.) This *can be depended upon*, as the process by which it is made insures this result. It has been *thoroughly tested*, and with the best results, as the certificates attached (which are but a very small portion of those in hand) will show.

Directions for Working.

The Damascus Steel, adapted to Tools, Chisels, Drills, Axes, &c., in the process of working, should not be heated beyond a *clear red heat*, and the heat for Tempering should be even *less*, then drawn to a "DARK BLUE."

Certificates.

Boston, Jan. 14th, 1859.

DEAR SIR:—This is to certify that I have examined the Steel Works of the Damascus Steel Company, in New York City and at Staten Island, and have examined the Steel of their make, and have been familiar with the practical working of it since they commenced supplying the consumers with their productions, and am clearly of the opinion that they are producing a superior quality to that now imported, and that their mode of making cast steel will eventually be the means of supplying this country, and that the steel made by this Company is adapted to the purposes for which the various grades and brands of imported steel are now used.

Very respectfully, yours,

JESSE GAY,
Chief Engineer U. S. Navy.

Extract from a Letter from a Master Mechanic.

"In reference to your Cast Steel, I will say, we should not know how to get along without it. We consider it far superior to any we have ever used, in several particulars, and quite as uniform and reliable; yes, more so than any English Steel I know of; for, in four months' constant use of it we have not found a bar, or even a piece, that was not *first rate*."

Yours, &c, JNO. E. DODGE.

WATERTOWN, N. Y., January 28th, 1859.

SIR:—We have used the Steel manufactured by the Damascus Steel and Iron Co., at our works, for planing and turning tools, and are happy to say it gives us entire satisfaction, as compared with imported Steel, and are able to obtain it at a reduced price.

NEW YORK, Feb. 3, 1859.

I. M. SINGER & CO

WARRANTED CAST STEEL FILES,

From either of the following manufactures, at the annexed list of prices:—

J. H. Shirt & Co., Hargreaves, Butcher, Greaves, Norton, Mariott, Carr, Newbold, Horner, Fisher, Turton, Lawson, Spear & Jackson, Ebertson, Peaces, Spafford & Co., etc., etc.

Round, half-round, 3-square, and Square Files, if parallel, to advance two inches on their respective descriptions.

All Dead Smooth Files double the price of Smooth

All quarter inches the price of the next size above.

Best Refined Cast Steel Saw Files.**PRICES.**

	3-sq. Taper 2d Cut Single.	2d Cut Frame Saw Single Cut and Gulleting.	3-sq. Blunt 2d Cut Single and Taper Saw Files, cut to the Point.
|| Inches.	Per dozen.	Per dozen.	Per dozen.
1 to 4	\$0 94	\$1 09	\$1 19
5	1 19	1 38	1 63
6	1 63	1 88	2 13
7	2 13	2 38	2 63
8	2 63	3 00	3 13
9	3 13	3 63	4 13
10	4 13	4 50	5 00
11	5 00	5 50	6 00
12	6 00	6 57	....

PRICES.

**Flat Entering, Mill Saw, Sq. 8½ Half Round, Round and Double
Inch and Upwards. Cotter Cut Mill Saw Files.
Taper Points.**

	Rough and Bastard.	2d Cut and Gun- Stockers' Rasps.	Smooth and Cabinet.		Rough and Bastard.	2d Cut & half-r'nd gun-st'k- ers' rasps	Smooth and Cabinet Rasps.
Inches	Per doz.	Per doz.	Per doz.	Inches	Per doz.	Per doz.	Per doz.
1 to 4	\$1 00	\$1 19	\$1 38	1 to 4	\$1 04	\$1 29	\$1 44
5	1 17	1 34	1 55	5	1 25	1 50	1 69
6	1 38	1 54	1 88	6	1 50	1 75	2 00
7	1 67	1 88	2 29	7	1 75	2 13	2 38
8	2 00	2 38	2 71	8	2 13	2 63	2 88
9	2 44	2 88	3 13	9	2 63	3 13	3 38
10	2 94	3 44	3 69	10	3 13	3 63	4 00
11	3 44	4 13	4 38	11	3 75	4 50	5 00
12	4 13	5 00	5 25	12	4 63	5 50	6 13
13	4 88	6 00	6 50	13	5 38	6 50	7 50
14	5 75	7 00	7 50	14	6 50	7 50	8 50
15	7 13	8 50	9 00	15	8 00	9 00	10 00
16	8 63	10 00	11 00	16	9 50	10 75	12 00

**Hand, Pillar, Round-off, Bone Equalling, Cross, Slotting, Tum-
Files, and Flat with two Round bler, Riffle, and Blunt Mill
Edges. Saw Files.**

	Rough and Bastard.	2d Cut.	Smooth.		Rough and Bastard.	2d Cut.	Smooth.
Inches	Per doz.	Per doz.	Per doz.	Inches	Per doz.	Per doz.	Per doz.
4	\$1 09	\$1 25	\$1 46	4	\$1 38	\$1 54	\$1 88
5	1 25	1 44	1 71	5	1 67	1 88	2 29
6	1 67	1 88	2 29	6	2 00	2 88	2 71
7	2 00	2 38	2 71	7	2 44	2 38	3 13
8	2 44	2 88	3 13	8	2 94	3 44	3 69
9	2 94	3 44	3 69	9	3 44	4 13	4 33
10	3 44	4 13	4 38	10	4 13	5 00	5 25
11	4 13	5 00	5 25	11	4 88	6 00	6 50
12	4 88	6 00	6 50	12	5 75	7 00	7 70
13	5 71	7 00	7 50	13	7 13	8 50	9 00
14	7 13	8 50	9 00	14	8 63	10 00	11 00
15	8 63	10 00	11 00	15	10 25	11 75	13 50
16	10 25	11 75	13 50	16	12 00	14 25	16 00



Car Department.

H. W. MOORE'S Patent.

24 inch Triple Plate Wheels, for Locomotives and Cars	\$11 00
26 " " " " " " " " "	11 50
28 " " " " " " " " "	12 00
30 " " " " " " " " "	12 50
31 " " " " " " " " "	13 00
33 " " " " " " " " "	13 50
36 " " " " " " " " "	16 00

The wheel illustrated by the above cut is unquestionably the strongest manufactured, while the weight (and consequent cost) is not materially increased.



H. W. MOORE'S Patent.

20 inch Single Plate Wheel for Locomotives and Cars	\$8 00
24 " " " " " " " " "	9 50
26 " " " " " " " " "	10 50
28 " " " " " " " " "	11 00
30 " " " " " " " " "	12 00
33 " " " " " " " " "	13 00
36 " " " " " " " " "	15 00

This wheel it will be observed is cast with a hollow hub—thus increasing its strength without adding to the weight.

I am also prepared to furnish the following superior quality of wheels at the annexed list of prices :

	26	28	30	33	36	inch
Whitney, Single Plate...	\$10 00	\$11 50	\$12 50	\$13 50	\$14 50	each.
Washburn, " ...	12 00	13 00	13 50	15 00		"
" Double Plate	13 50	14 50	15 00	16 00	18 00	"
Richardson, Barnum & Co		14 50	15 00	16 00	18 00	"
Bush & Lobdell						
Single Plate }	10 00	11 50	12 50	13 50	15 00	"
Double " }	14 00	14 50	15 00	16 00	19 00	"

Also 18 inches Spoke Wheels, for Hand Cars, each.....\$2 50

" 18 " " " for Repairing and Mining Cars, each.. 4 00

Boring Wheels, accurately to standard Gauges, Holes warranted of uniform size, 25 cts. per wheel.

Fitting Wheels, on axles, complete, \$1 per wheel, if axles are furnished by purchaser.

Car Axles.

Best Faggoted Hammered.....	6 cents.
" Selected Scrap, "	5 "
" " " Rolled.....	4 "
" English Hammered.....	6 "

Double Geared Screw Press,

For drawing on and off Locomotive and Car Wheels, 6 feet diameter and less, \$250. Counter Shaft and Pulley extra, \$60.

Press, for Car wheels, 3 feet diameter and less, \$225. Counter Shaft and Pulley, \$60.

Extra Quality French Plate Double Thick Car Glass.

SIZES.	PRICES PER 50 FEET.				NUMBER OF LIGHTS PER BOX OF FIFTY FEET.			
	1 qual.	2 qual.	3 qual.	4 qual.				
8x11 to 10x15 }	6 00	5 50	4 75	4 25	8x10	90	13x18	31
10x16 to 12x18 }	7 50	6 50	5 50	4 50	9x12	67	15x20	24
13x18 to 16x24 }	8 00	7 50	6 50	4 75	10x15	48	16x24	19
16x26 to 20x30 }	9 50	8 25	7 25	.....	10x16	45	16x26	17
					11x16	41	18x28	14
					12x18	34	20x30	12

Best French Ruby Glass, per square foot..... 60 cents.
 " " Green Glass, " " 50 "

Tin for Car Roofing,

OF THE BEST BRANDS, AT THE LOWEST MARKET PRICES.

Baggage Barrows.

Brake Chain,.....per pound,..6 cents.

Draw Bars, best Wrought Iron, "7 "

" " Cast " "4 "

Springs.

Elliptic..... per lb.....\$0 10 to \$0 12
 Half Elliptic..... " 0 10 to 0 12
 India Rubber Car Springs..... " 0 50
 Gardner's Volute..... each 4 00 to 5 00
 French's Spiral..... " 4 00 to 5 00
 Switch-Stands Iron..... " 10 00 to 18 00

BAILEY'S ADJUSTABLE CAR SEAT, FOR DAY AND NIGHT TRAVEL.



This seat combines CHEAPNESS and Simplicity of construction with the greatest amount of COMFORT and convenience. The material of the frame is Cast Iron, and its general appearance is far lighter—more elegant—its strength and durability much greater—is adusted at any desired angle, and retained in its position without catches or fastenings of any kind—occupies no more space than the common seat, and costs no more. The back is upholstered, and used on BOTH sides, thus wearing twice as long as the common seat. It is provided with two Head-rests, capable of swivelling around to suit the occupant's pleasure, being turned back out

of the way in the day-time, thus making these atequally available for Day or Night Travel

Liberal arrangements made with Railroad Companies desiring to purchase the right to build their own seats.

They are now in use on the following Roads, to which we refer :

New York and Erie.
Baltimore and Ohio.
South Carolina.
Wilmington and Manchester.
Richmond, Fredericksburg and Potomac.
Ohio Central.
Cincinnati, Hamilton and Dayton.
Little Miami, Cleveland and Xenia.
Cleveland, Pittsburg and Ashtabula.
Illinois Central.
Pennsylvania.
South Western.
Cleveland and Erie.
Marietta and Cincinnati.
Virginia Central.
Georgia Central.

List of Prices.

An ordinary sized Seat, plush covered.....	\$20 00
Double Seats, extra quality plush.....	25 00
For the Iron Work, fitted up, without painting, per seat.....	7 50
For the Iron work, fitted up, elegantly enamelled and gilt, per seat.....	9 00
“ “ “ “ “ with wood	
work, complete, per seat.....	10 50

Hand Cars and Common Car Seats built to order, and all kinds of general Car Fittings and Upholstery work executed with punctuality and despatch.



The above cut represents the Adjuster attached by the removal of the side strip of the window.

After five years use it is found to possess the following advantages:

The Sash remains in the position in which it is placed.

The sticking or binding of the Sash in wet weather is obviated, as it provides for the *shrinking* and *swelling* of the wood.

It prevents the rattling of the sash.

It excludes all dust, noise and cold.

It is invisible, and passengers cannot have access to it.

It precludes the necessity of using *catches*, *bolts*, and other intricate *fixtures*, which are so annoying to passengers.

The Sash can be *wholly freed from the frame* in a few minutes for repair *ing*, cleaning, &c.

Its removal does not injure the appearance of the Sash.

Price \$1 per doz.

TESTIMONIALS.

Boston and Providence Railroad, Boston, May 15th, 1855.

We have been using Safford's Patent Car Window Springs for the last nine months, and find them better adapted to Cars than any other we have used.

DANIEL NASON, Supt.

Worcester, August 20th, 1857.

I have used Safford's Patent Car Window Springs for some time, and they have always proved very satisfactory.

OSGOOD BRADLEY, Car Builder.

Boston, November 20th, 1855.

I have had Safford's Patent Window Springs in use eighteen months, and find they sustain the sash at any desired elevation, keep out the wet and cold, and prevent its rattling. I cheerfully recommend them to all.

CALEB SANDERSON, Architect.

Old Colony and Fall River Railroad Co.

We have had Safford's Patent Car Window Springs upon this road two years, and find them perfectly satisfactory, and shall continue their use in our cars.

ALEXANDER HOLMES, President.

Repair Shop, Boston and Lowell Railroad.

We have had in use on our cars Safford's Patent Car Window Springs for about one year, and find them to be a superior article, retaining the window firmly in its place, and being very economical in first cost, and in the keeping up.

G. B. KING, M. M.

East Cambridge, July 30th, 1855.

Concord, Manchester & Lawrence Machine Shop. }

Concord, N. H., August 5th, 1857. }

Mr. A. G. SAFFORD—Dear Sir: We have used your Window Springs on our Passenger Cars, and find they are all you recommend them to be, and in our belief a superior Spring for a Car Window to any other.

Yours truly, JOHN KIMBALL, M. M.

Boston, May 31st, 1856.

This is to certify that we have on board the steamer "Henry Morrison," Safford's Patent Angular Friction Springs for Window Sash, and think them a first rate article. They answer well the purpose claimed for them.

GEORGE LORING, Master.

Boston, September 26th, 1855.

We have used Safford's Patent Car Window Springs, and consider them the best article for that purpose, and should recommend their use.

HENRY W. FARLEY, M. M. Eastern Railroad.

Charlestown, July 19th, 1855. }

Fitchburg Railroad Repair Shop. }

Mr. A. G. SAFFORD—Dear Sir: In answer to your inquiry in regard to your Patent Sash Springs for Car Windows, I will say they answer the purpose better than anything of the kind I ever saw, both for durability and for keeping the sash wherever you place it.

E. VARNEY.

Boston, May 14th, 1855.

Mr. A. G. SAFFORD—Dear Sir: I find the Friction Window Spring which you put on my windows a very excellent article, and cheerfully recommend its use to all persons desiring tight windows.

D. W. GOOCH, Architect.

Round and Flat Head Brass Capped Gimlet Pointed Screws.

$\frac{3}{4}$ Inch.	1 Inch.	1 $\frac{1}{4}$ Inch.	1 $\frac{1}{2}$ Inch.	1 $\frac{3}{4}$ Inch.	2 Inch.	2 Inch.	2 $\frac{1}{2}$ Inch.
No. 7 \$0 68	No. 7 \$0 76	No. 7 \$0 81	No. 8 \$1 13	No. 10 \$1 62	No. 10 \$1 80	No. 12 \$2 48	No. 14 \$3 53
8 0 74	8 0 84	8 0 87	9 1 26	11 1 76	11 1 96	13 2 82	15 3 87
9 0 81	9 0 93	9 1 04	10 1 39	12 1 94	12 2 14	14 3 19	16 4 17
10 0 90	10 1 04	10 1 22	11 1 55	13 2 19	13 2 49	15 3 54	17 4 68
11 0 98	11 1 16	11 1 40	12 1 73	14 2 48	14 2 85	16 3 87	18 5 19
12 1 08	12 1 31	12 1 58	13 1 94	15 2 84	15 3 20	17 4 23	20 6 32
	13 1 47	13 1 76	14 2 18	16 3 24	16 3 55	18 4 68	
	14 1 65	14 1 94	15 2 48	17 3 70	17 3 90		
	15 1 85	15 2 12	16 2 79	18 4 21	18 4 25		
		16 2 30	17 3 15				

Silver Plated 10 per cent. advance on above list.

Solid Brass Screws, all No.'s and sizes, at 20 per cent. discount from list prices.

PRICE LIST OF IRON SCREWS.

[illegible]

HAND STAMPS.**Ames' Patent Self-Inking Stamp.**

This truly ingenious Stamp is so constructed that with ONE MOTION OF THE HAND THE DIE IS INKED, AND THE IMPRESSION MADE—and double of the number of impressions can be struck with them than can be made with any other Stamp, therefore making them very desirable for ticket agents. The dates are changed with only a moment's delay.

[Price of Stamp Complete with Plate, Ink and Changeable Dates (months and days,) \$9. Without Dates, \$6.

**Ruggles' Patent Flexible Hand Stamp.**

This Stamp is the only Flexible Hand Stamp in the market. Its many advantages are too well known to railroad men to require further comment.

Price for Stamp complete, consisting of Handle, Plate, set of Pads, Ink and Brush. Change of Dates (Months and Days,) \$9. Without Changeable Dates, \$6.

A Stiff Hand Stamp with Iron Die, Changeable Dates and Inscription, containing 13 letters, can be furnished for \$2 50, 10 cents for each additional letter.

A Steel Stamp with Steel Dates, \$8 50.

Stamping Boxes (for stiff stamps) with Ink Pad and Brush, \$1 25.

Seal Presses of most improved style.

Conductors' Punches. A superior article, \$24 per dozen.

Conductors and Breakmens' Badges in great variety.

BAGGAGE CHECKS.

Our facilities are such that we are prepared to furnish Baggage Checks with greater dispatch than any other manufacturer in the Country, at the following

LIST OF PRICES.

Brass, per 100 pair complete.....	\$10 00
Reversible " "	12 00
Copper " "	11 00
Leather " "	10 00
White Metal " "	11 00
German Silver " "	14 00

Particular attention is paid to the selection of suitable leather for straps, and great care taken that no defective straps are used.

The checks will in all cases be stamped in the most distinct and legible manner, and made of a suitable thickness of metal.

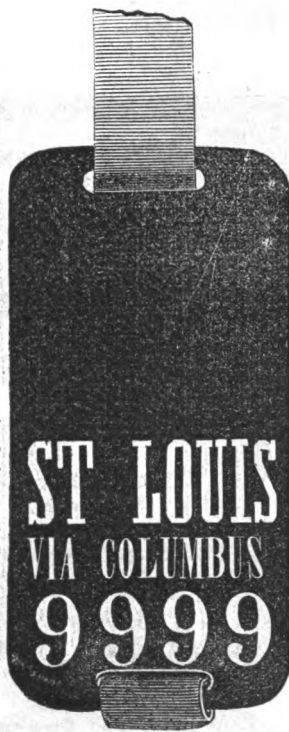
When ordering please state the number of the check in this book. In ordering the Reversible Checks please state what pattern you wish for the passenger check.



NEW
Reversible
BRASS
CHECK,

Manufactured only
by the
subscriber.

This
check in-
cludes a
passenger
Check,
which
may be
made
from any
pattern in
this book.





19



13



11



27



75



57



21



15



29



26



75



60



22



38



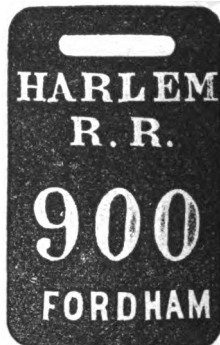
32



34



37



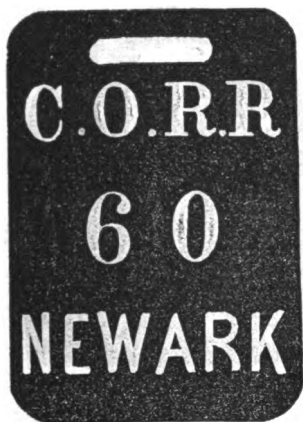
73



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48



74



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77



20



61

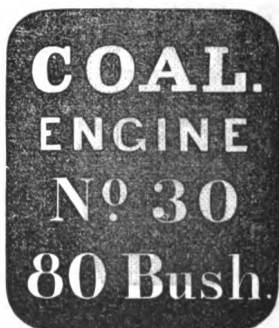
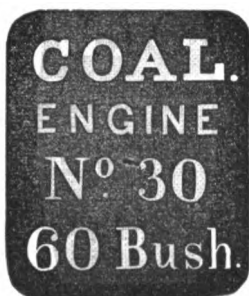
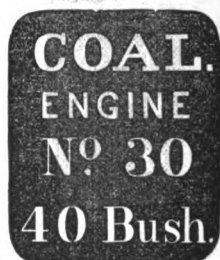
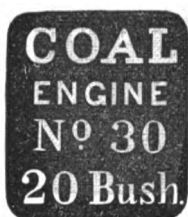
BRASS CHECKS FOR OIL, WOOD AND COAL.

These Checks are intended to be used by Engineers, and will greatly facilitate the keeping of accounts, and economise the consumption of Oil, Wood and Coal.

PRICE \$2.00 PER HUNDRED.

When the name of the Engine is stamped on in place of the number, an extra charge of 15 cents per letter for the stamp will be made.





PALLETS

OF BRASS FOR HOLDING TYPE TO PRINT WITH.

All sizes kept on hand.

Type furnished when required.

LIST OF PRICES.

Of Steel Alphabet, Figures and Stamps.

No.	SIZE OF LETTER	SIZE OF STEEL.	PRICE OF ALPHABET	PRICE OF FIGURES.	STAMPS PR. LET	
1	$\frac{1}{8}$ inch.	$\frac{3}{8}$ inch.	\$7 00	\$2 25	20cts	Marking Plates or Stencils cut at the following prices: $\frac{1}{8}$ to $\frac{3}{8}$ inch per letter..... 6cts. $\frac{3}{8}$ to 1 inch per letter 5 1 to $1\frac{1}{2}$ " " 6 $1\frac{1}{2}$ to 2 " " 9 2 to 3 " " 12 3 to 4 " " 18 4 to 5 " " 25
2	$\frac{1}{4}$ "	$\frac{1}{2}$ "	6 00	2 00	20 "	
3	$\frac{1}{4}$ "	$\frac{1}{2}$ "	5 00	1 75	15 "	
4	$\frac{1}{2}$ "	$\frac{1}{2}$ "	5 00	1 75	15 "	
5	$\frac{5}{16}$ "	$\frac{1}{2}$ "	5 00	1 75	15 "	
6	$\frac{1}{2}$ "	$\frac{1}{2}$ "	5 00	1 75	18 "	
7	$\frac{7}{16}$ "	$\frac{1}{2}$ "	5 00	1 75	18 "	
8	$\frac{3}{8}$ "	$\frac{3}{4}$ "	7 00	2 25	25 "	
9	$\frac{1}{2}$ "	$\frac{7}{8}$ "	9 00	3 00	35 "	
10	$\frac{5}{16}$ "	$\frac{1}{2}$ "	12 00	4 00	45 "	
11	$\frac{7}{16}$ "	$\frac{5}{8}$ "	15 00	5 00	50 "	
12	$\frac{1}{2}$ "	$\frac{3}{4}$ "	18 00	6 00	60 "	

The price, as shown in the above list, *includes* the charge for the steel. For extra heavy stamps a charge of 50 cts. per lb. for steel and forging will be made.

Please state what the stamps are to be used for, and the size of the letters. This will insure their giving satisfaction.

Brands made to Order.

These vary so much in size, style, and material used, that it is impossible to give an accurate statement here of their cost.

PAINTING MATERIALS.

I am prepared to furnish the best quality of Painting Materials at the lowest prices, among which are the following :

White Lead.

Pure in Oil.
Extra in Oil.
No. 1 in Oil.
Pure Dry.
Extra Dry.
No. 1 Dry.

Penn and Lehigh Zinc.

Nos. 1 and 2, Snow White, Ground in prepared Oil.
Porcelain Zinc, Snow White.
Ground in Demar Varnish.

French Zinc, Snow White.

No. 1, Ground in Prepared Oil.
" " Demar Varnish.
Brown Zinc in Oil.
Light Stone Color in Oil.
Black Zinc.
No. 1 Dry Zinc, French and American.

Patent Dryer,

For White Lead and Zinc Paint.
This article will be found to give more satisfaction than any other. We will warrant it not to injure or change the color of the finest white. Put up in Cans from 1 to 4lbs

Putty Made with pure Linseed Oil.

In Bladders and Cans of 12 to 50lbs.

Reds.

DRY.

Vermillion, English Deep.
" " Pale & Imitation.
" American.
" French.
" Chinese.
" Trieste.

Venetian Red, Nos. 1 and 2, English and American.

Indian Red, Nos. 1 and 2.

Red Lead, English and American.

Orange Mineral, English.

Rose Pink.

Red Chalk, in fingers.

IN OIL.

Vermillion, English and American
1 lb cans.

Indian Red, 1 to 5 lb cans.

Red Lead, 1 to 10lb cans.

Venetian Red, 1 to 10 lb cars.

" " 12½ & 25 lb kegs.

Yellows.

DRY.

Chrome Yellow, Trego's, Nos. 1, 2, and 3.

Chinese Yellow, English.

Dutch Pink, English, Havre, Vermont, Oxford and Rochelle Stone.

Baltimore Ochre.

Orange Yellow, Red Shade.

Yellow Lake, Nos. 1 and 2.

IN OIL.

Chrome Yellow, Nos. 1 and 2, 1 to 10 lb cans.

Rochelle & Stone Ochre, 1 to 10lb cans

" " 12½ & 25lb kegs.

Chinese Yellow, 1 to 10lb cans.

Naples Yellow, 1lb cans.

Blues.**DRY.**

Chinese, English, French and American Blue.
 Prussian Blue, Nos. 1 and 2.
 Ultramarine Blue, Nos. 1 and 2.
 Celestial Blue, English, Nos. 1 & 2.
 Antwerp and Steel Blue.

IN OIL.

Chinese Blue, $\frac{1}{2}$ to 10lb cans.
 Prussian Blue, Nos. 1 and 2, in $\frac{1}{2}$ to 10lb cans.
 Celestial Blue Paint, 1 to 25lb cans.

IN WATER.

Chinese and Prussian Blue, in kegs.

Verdigris.**IN OIL.**

Verdigris Pure, and No. 1, in 1 to 20lb cans.

Greens.**DRY.**

Nos. 1 and 2, Chrome Green, D. M. L.
 Hibernian Green, Quaker or Bronze Green, English, Brunswick, Persian, Mineral, Marine, Verditor, and Saxon Greens.
 Paris Green, Nos. 1, 2, and 3.
 Permanent Green.

IN OIL.

Paris Green, Nos. 1 and 2, in 1 to 14 lb cans.
 Chrome Green, Nos 1 and 2, in 1 to 14lb cans.
 Permanent, Imperial, Marine, Saxon, Mineral and Bronze Green, in 1 to 14lb cans.
 Arsenical Green, in 1 to 25lb cans.

6*

Browns.**DRY.**

Vandyke Brown, powdered,
 Burnt Turkey Umber, lump and powdered.
 Raw Turkey Umber, lump and powdered.
 Spanish Brown.

IN OIL.

Vandyke Brown in Oil, 1 to 5lb cans.
 Burnt Turkey Umber, 1lb cans.
 Raw " " 1lb cans.

Siennas.**DRY.**

Italian Sienna, raw, burnt and powdered.

IN OIL.

Italian Sienna, raw and burnt, 1 to 5lb cans.

IN WATER.

Italian Sienna, raw and burnt, 1lb jars.

Blacks.**DRY.**

Drop or Patent Black, English and American.
 Eddy's Refined Lamp Black.
 American Lamp Black, assorted papers.
 Cape Lamp Black, in small papers.
 Calcined Lamp Black,
 Blue Black, English.
 Ivory Black.
 Black Lead, German and American.

IN OIL.

Drop Blacks, 1 to 10lb cans.
 Black Paint, 1 to 25lb cans and $12\frac{1}{2}$ and 25lb kegs.
 Arsenical Black, 10 to 25lb cans.

Roof Paint.

This article we can recommend for Leaky Roofs. One coat is more effectual than three of the paints generally used.

Mineral Paints.

DRY.

Fire Proof, different Shades.
Bridgewater Paint.

IN OIL.

Assorted Colors.
Bridgewater Paint.

Gold Leaf.

Extra Deep Gold.
Usual "
Pale Gold.
Bronzes, Nos. 1, 2, 3, 4.

Glazier's Diamonds.**Glazier's Points.****Sand Paper.**

Excelsior.
Common.

Pallet Knives.

No. inches, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12.

Putty Knives.

Nos. 1 and 2.

Paint Mills.

Nos. 1, 2, 3.

Stones and Mullers.**Window Glass for Cars, &c.**

(See Page 108.)

Paint Brushes.

Nos. 4 o, 5 o, 6 o, Extra Paint.
Nos. 1 o, 2 o, 3 o, 4 o, 5 o, 6 o, usual.
Nos. 1, 2, 3, 4, 5, 6, 7, Paint Brush.
Nos. 1, 2, 3, 4, 5, 6, 7, 8, Sash Tools.

Varnish Brushes.

Nos. 1, 2, 3, 1 o, 2 o, 3 o, 4 o.

Painter's Dusters.

Nos. 1, 2, 3.

Oils.

Linseed Oil, English.
" " American.
Boiled Linseed Oil.

Spirits Turpentine.**SUNDRIES.**

Paris White, English.
Whiting, English and American.
Chalk, white and red.
Pumice Stone, lump and powdered.
Gum Shellac, Asphaltum.
German Glue, per lb 20 to 24cts.
English Glue, " 18 to 20
American Glue, " 16 to 20
White Glue, " 24 to 30
Japan Tins.
China White.

SMALTS.

Blue, Black, Brown, Green and Red.

TUBE COLORS

in great variety.

LIST OF SIZES AND PRICES PER HUNDRED BOLTS.

Size.		Price.		Size.		Price.		Size.		Price.		Size.		Price.		Size.		Price.		Size.		Price.	
In.	In.	\$	c.	In.	In.	\$	c.	In.	In.	\$	c.	In.	In.	\$	c.	In.	In.	\$	c.	In.	In.	\$	c.
1½	x 4	12	90	1½	x ½	3	00	1½	x ¾	3	00	1½	x 1	3	25	1½	x 1½	3	70	1½	x 2	4	40
1½	x 4	22	95	1½	x 1½	3	05	1½	x 2	3	35	1½	x 2½	3	50	1½	x 3	3	75	1½	x 4	4	50
2	x 4	33	00	2	x 2	3	10	2	x 2½	3	40	2	x 3	3	55	2	x 3½	3	80	2	x 4	4	55
2½	x 4	43	05	2½	x 2½	3	15	2½	x 3	3	45	2½	x 3½	3	60	2½	x 4	3	85	2½	x 4½	4	60
2½	x 4	53	10	2½	x 3	3	20	2½	x 3½	3	50	2½	x 4	3	65	2½	x 4½	3	90	2½	x 5	4	65
3	x 4	63	15	3	x 3½	3	25	3	x 4	3	55	3	x 4½	3	70	3	x 5	3	95	3	x 5½	4	70
3½	x 4	73	20	3½	x 4	3	30	3½	x 4½	3	60	3½	x 5	3	75	3½	x 5½	3	100	3½	x 6	4	75
4	x 4	83	25	4	x 4½	3	35	4	x 5	3	65	4	x 5½	3	80	4	x 6	3	105	4	x 6½	4	80
			30				40				75												
			35				50				80												
			40				55				85												
			45				60				90												
			50				65				95												
			55				70				100												
			60				75				105												
			65				80				110												
			70				85				115												
			75				90				120												
			80				95				125												
			85				100				130												
			90				105				135												
			95				110				140												
			100				115				145												
			105				120				150												
			110				125				155												
			115				130				160												
			120				135				165												
			125				140				170												
			130				145				175												
			135				150				180												
			140				155				185												
			145				160				190												
			150				165				195												
			155				170				200												
			160				175				205												
			165				180				210												
			170				185				215												
			175				190				220												
			180				195				225												
			185				200				230												
			190				205				235												
			195				210				240												
			200				215				245												
			205				220				250												
			210				225				255												
			215				230				260												
			220				235				265												
			225				240				270												
			230				245				275												
			235				250				280												
			240				255				285												
			245				260				290												
			250				265				295												
			255				270				300												
			260				275				305												
			265				280				310												
			270				285				315												
			275				290				320												
			280				295				325												
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			460				475				505												
			465				480				510												
			470				485				515												
			475				490				520												
			480				495				525												
			485				500				530												
			490				505				535		</										

SQUARE NUTS.

Size Square.	Thick-ness	Diameter of hole.	WROUGHT IRON.		
$\frac{1}{2}$	by $\frac{1}{4}$	by $\frac{3}{8}$	for $\frac{1}{2}$ in. bolts.....	per lb.	10c.
$\frac{5}{8}$	by $\frac{1}{8}$	by $\frac{3}{8}$	for $\frac{1}{8}$ "	"	10c.
$\frac{3}{4}$	by $\frac{3}{8}$	by $\frac{1}{2}$	for $\frac{3}{8}$ "	"	9c.
$\frac{7}{8}$	by $\frac{3}{8}$	by $\frac{3}{8}$	for $\frac{1}{8}$ "	} By the Keg, " 6½c	
1	by $\frac{1}{2}$	by $\frac{1}{2}$	for $\frac{1}{2}$ "		
$1\frac{1}{8}$	by $\frac{1}{2}$	by $\frac{1}{2}$	for $\frac{1}{8}$ "		
$1\frac{1}{4}$	by $\frac{5}{8}$	by $\frac{1}{2}$	for $\frac{5}{8}$ "		
$1\frac{1}{2}$	by $\frac{5}{8}$	by $\frac{1}{2}$	for $\frac{1}{2}$ "		
$1\frac{3}{4}$	by $\frac{3}{4}$	by $\frac{1}{2}$	for $\frac{3}{4}$ "		
$1\frac{3}{4}$	by $\frac{7}{8}$	by $\frac{1}{2}$	for $\frac{7}{8}$ "		
2	by 1	by $\frac{7}{8}$	for 1 "		
2	by $1\frac{1}{4}$	by 1	for $1\frac{1}{8}$ "		
$2\frac{1}{4}$	by $1\frac{1}{4}$	by $1\frac{1}{8}$	for $1\frac{1}{4}$ "		
$2\frac{1}{2}$	by $1\frac{1}{2}$	by $1\frac{1}{8}$	for $1\frac{3}{8}$ "		
3	by $1\frac{1}{2}$	by $1\frac{3}{8}$	for $1\frac{1}{2}$ "		
4	by 2	by $1\frac{1}{2}$	for 2 "		

IN KEGS OF 150 POUNDS.

SIX SQUARE NUTS.

Size Square.	Thick-ness	Diameter of hole.	WROUGHT IRON.		
$\frac{1}{2}$	by $\frac{1}{4}$	by $\frac{3}{8}$	for $\frac{1}{2}$ in. bolts.....	per lb.	13c.
$\frac{5}{8}$	by $\frac{1}{8}$	by $\frac{3}{8}$	for $\frac{1}{8}$ "	"	11c.
$\frac{3}{4}$	by $\frac{3}{8}$	by $\frac{1}{2}$	for $\frac{3}{8}$ "	"	10c.
$\frac{7}{8}$	by $\frac{1}{8}$	by $\frac{3}{8}$	for $\frac{1}{8}$ "	"	9c.
1	by $\frac{5}{8}$	by $\frac{1}{2}$	for $\frac{1}{2}$ "	} By the Keg, " 8½c.	
$1\frac{1}{8}$	by $\frac{5}{8}$	by $\frac{1}{2}$	for $\frac{1}{8}$ "		
$1\frac{1}{4}$	by $\frac{3}{4}$	by $\frac{1}{2}$	for $\frac{5}{8}$ "		
$1\frac{3}{8}$	by $\frac{3}{4}$	by $\frac{5}{8}$	for $\frac{1}{2}$ "		
$1\frac{1}{2}$	by $\frac{7}{8}$	by $\frac{1}{2}$	for $\frac{3}{4}$ "		
$1\frac{3}{4}$	by 1	by $\frac{1}{2}$	for $\frac{7}{8}$ "		
2	by $1\frac{1}{8}$	by $\frac{7}{8}$	for 1 "		
2	by $1\frac{1}{4}$	by 1	for $1\frac{1}{8}$ "		
$2\frac{1}{4}$	by $1\frac{1}{4}$	by $1\frac{1}{8}$	for $1\frac{1}{4}$ "		
$2\frac{1}{2}$	by $1\frac{1}{2}$	by $1\frac{3}{8}$	for $1\frac{3}{8}$ "		
$2\frac{1}{2}$	by $1\frac{1}{2}$	by $1\frac{1}{4}$	for $1\frac{1}{2}$ "		
3	by $1\frac{1}{2}$	by $1\frac{3}{8}$	for $1\frac{1}{2}$ "		
4	by 2	by $1\frac{1}{2}$	for 2 "		

IN KEGS OF 150 POUNDS.

Joint Bolt Nuts, punched to order at same price as square Nuts of corresponding sizes of Iron.

WASHERS.

Outside Diameter.	Size of Hole.	Wire Gauge. Thickness	100 on a Wire.			
$\frac{1}{8}$ by $\frac{1}{4}$	No. 16	for $\frac{3}{16}$	in bolts	per 100	12½c.	
$\frac{3}{8}$ by $\frac{1}{2}$	No. 16	for $\frac{1}{2}$	"	"	14c.	
$\frac{3}{4}$ by $\frac{3}{8}$	No. 15	for $\frac{1}{4}$	"	"	16c.	
1 by $\frac{7}{16}$	No. 13	for $\frac{3}{8}$	"	} By the Keg, per lb. 8c.		
1½ by $\frac{1}{2}$	No. 13	for $\frac{7}{16}$	"			
1¾ by $\frac{1}{2}$	No. 12	for $\frac{1}{2}$	"			
1¾ by $\frac{5}{8}$	No. 12	for $\frac{1}{2}$	"			
1½ by $\frac{11}{16}$	No. 11	for $\frac{5}{8}$	"			
1½ by $\frac{3}{4}$	No. 10	for $\frac{11}{16}$	"			
1¾ by $\frac{11}{16}$	No. 10	for $\frac{3}{4}$	"			
2 by $\frac{7}{8}$	No. 9	for $\frac{13}{16}$	"			
2 by $\frac{13}{16}$	No. 9	for $\frac{7}{8}$	"	}		
2¼ by $1\frac{1}{8}$	No. 8	for 1	"			
2½ by $1\frac{1}{4}$	No. 8	for $1\frac{1}{8}$	"			
2¾ by $1\frac{3}{8}$	No. 7	for $1\frac{1}{4}$	"			

IN KEGS OF 150 POUNDS.

COACH OR LAG SCREWS.

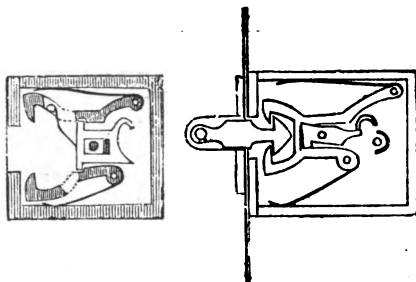
	PRICE per lb.
$\frac{3}{8}$ inch - - - - -	14c.
$\frac{7}{16}$ " - - - - -	12½c.
$\frac{1}{2}$ " - - - - -	10½c.
$\frac{5}{8}$ " - - - - -	10c.
$\frac{3}{4}$ " and upwards - - - - -	9½c.

Set Screws, Bridge Bolts, and Bolt Ends, made from best refined Iron.

Boiler Rivets—any length by $\frac{1}{2}$ inch to inch diameter, per lb. 6c.

Tank Rivets, with any form of head.

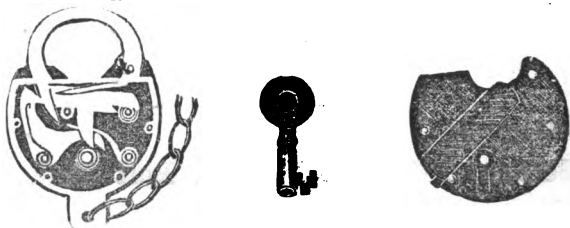
No.	Wire Gauge,	PRICE per lb.
4	- - - - -	10½c.
5 & 6	" " - - - - -	12½c.
7 & 8	" " - - - - -	12c.
9	" " - - - - -	14c.
10	" " - - - - -	16c.
11	" " - - - - -	18c.



JONES' SWITCH AND FREIGHT CAR LOCKS.

These Locks are made of Iron, therefore there can be no inducement to steal them for the value of the metal. They are also placed in the side of the door (the same as the common mortice locks), so that it is impossible to force them off. They are made to self-lock or not, at option, as the plate at the bottom of the jaws, when the key is turned, holds the jaws open to enable the key to be taken out, and leaves it so until the key is inserted, and reversed in the opposite direction, to bring the jaws together.

Composition Switch Padlocks,



Which have a double action, and lock themselves. An important improvement in the arrangement has been made to prevent the Lock being forced open by concussion.

Prices:

Jones' Iron Mortice Locks, per doz.....	\$18 00
“ Brass Padlocks, with chains, per doz.....	15 00
“ “ “ Switch “	15 00
“ “ “ with spring drop, per doz.....	16 00
Conductors' Locks for Ticket Boxes, “	12 00
Thompson's best brass Padlocks, “	12 00

Locks made to order to “fit” sample keys.

LANTERNS.



*Conductors' Lantern, Brass.
No. 4, Globe. \$18 per doz.*



*Conductors' Lantern, Brass.
No. 4, Egg. \$18 per doz.*



*New Style Conductors' Hand
Lantern, Brass.
\$30 per dozen.*



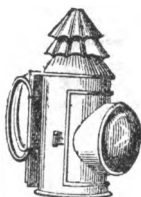
*Conductors' Hand Lantern,
No. 2, Egg. Fancy Brass.
\$22 per dozen.*



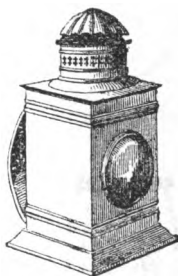
Blake's Arm Lantern.
\$40 per dozen.



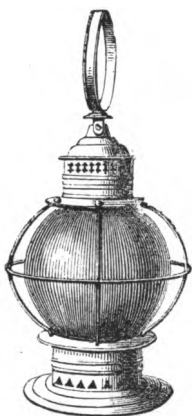
Conductors' Breast Lantern.
Brass. \$30 per dozen.



Police or Dark Lantern.
Tin Japanned, \$9 per doz.
Large size, $3\frac{1}{2}$ inch diameter,
\$12 per doz.



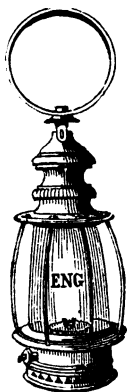
Engineers' Lantern. Brass,
Bulls' Eye. \$20 per doz.



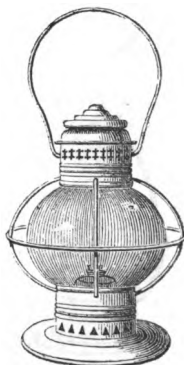
Signal Lantern. Tin, No. 2, Globe.
White, Red, Green or Blue.
\$11, 21, 18, 18 per doz.



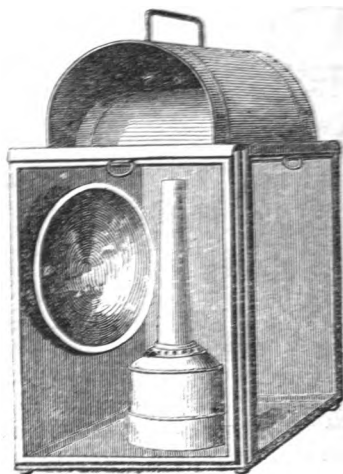
Signal Lantern. Tin, 1 1/2 Egg.
White, Red, Green or Blue.
\$11, 21, 18, 18 per doz.



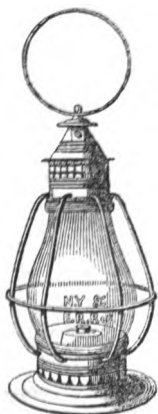
Engineer's Lantern. Brass.
\$16 per doz.



Railroad Globe Hand Lantern. Tin.
\$8 per doz.



Railroad Station House Lantern. 8 inch Reflector.
\$5 each.



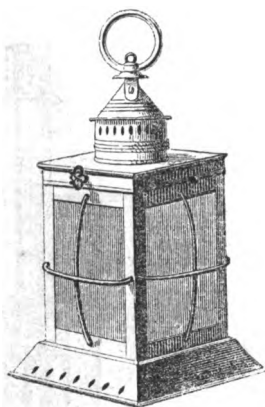
Railroad Hand Lantern. Tin.
No. 2, Egg. \$7 per doz.
With Flanges, ex. heavy, \$9 per doz.



Railroad Hand Lantern. Tin.
Flanged, extra heavy, \$11 per doz.
Double Guards, \$12 per doz.



*Tri-Color Revolving Signal
Lantern.*
\$36 per dozen.



Square Signal.
Large red, \$25 per dozen.
" green, 23 " "
small red, 22 " "
" green, 20 " "

The Tri-Color Lantern is so constructed that it is impossible for any confusion to occur in giving signals—each light being entirely distinct from the other—the colors may be arranged as desired. It has the patent "Fresnel Lens" glass, and will be found the best white light for *common use*, and in the end the cheapest, as it is not so liable to get broken and its arrangement is such that it cannot get out of order. A sample furnished if desired.

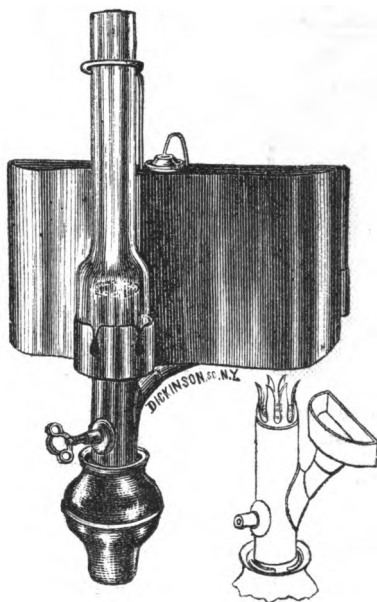
Bridge Signals.—We also manufacture *large Signals* for *Bridges*, &c., embracing the same principle.

Lanterns Engraved with name in a wreath of flowers for 50 cents.

Extra for locomotives, steamboats, trains, &c., according to the amount of work.

Initials of railroads engraved for 3 cents per letter.

Lantern Globes, 25 cents per pound.

CAR LAMPS.**MOELLER'S PATENT CAR LAMP.**

\$36 per dozen.

This improvement permits an even light to be maintained throughout a whole night, over the roughest road.

The oil fountain is much higher than the burning level of the wick. With the common mode of feeding the oil, the lamp would run over, the universal evil with the usual patterns of car lamps. The oil fountain is air-tight, and the oil can feed down no faster than it burns.

We have also the above style Fountain Car Lamp *without the patent* at \$30 per dozen.

Car Lamp Chimneys, \$1 25 per dozen.

PARAGON SELF-GAS GENERATOR, DESIGNED ESPECIALLY FOR RAILROAD CARS.



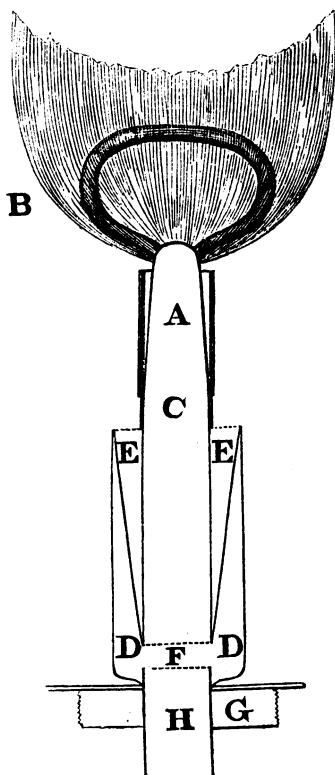
Railroad Companies have long been in want of a Lamp devoid of *Smell, Smoke and Flicker*, unaffected by any temperature; combining economy, simplicity, safety, style of finish, and brilliancy of Light.

And such is the Paragon Gas Generator, which I now take pleasure in offering to the public, not only feeling confident but knowing that it WILL meet the requirements, and be acknowledged by all to be *THE LIGHT for the People*.

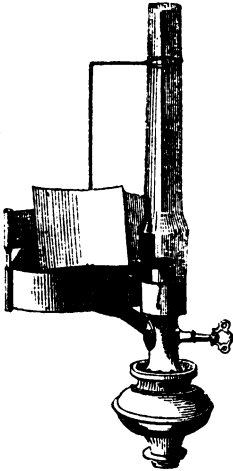
This Burner generates gas from common burning fluid, giving a clear and brilliant flame, requiring no trimming, as it burns no wick—the wick simply acting as a conductor of the fluid to the gasometer, where it is generated into gas as fast as it burns. It is economical, costing but five-eighths of a cent per hour, (fluid at sixty-two cents per gallon,) lighting a room sixteen feet square. It is safe, being constructed on scientific principles, and is the only Burner that *insulates* the lamp from heat. It is a well known fact that the fluid will not explode until warmed sufficiently to vaporize. And to this particular construction, as well as style of finish, (being adapted to people of all classes,) the proprietors claim for it a superiority over all other self-generating Burners. It can be attached to all styles of oil, kerosene, lard and camphene lamps, and gas-fixtures.

Parties now using Candle Burners, can have the Gas Generator attached for trial, by sending one to my address.

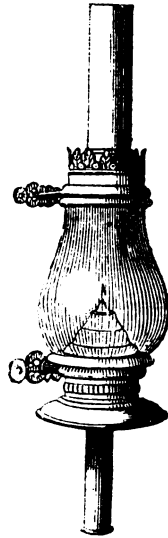
[See description, next page.]

DESCRIPTION OF THE BURNER.

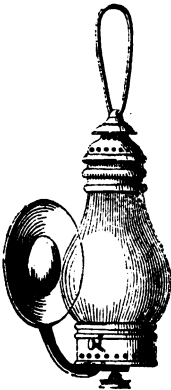
A is the Tip B, Jet. C, Central Tubing or Gasometer. E E, Conical Chamber, which surrounds and joins tubing C at bottom, and extending nearly up to jets. D D, an Auxiliary Chamber, which surrounds and joins Chamber E E at top, and extends nearly to screw-cap G, making an elongated tube or casing. It will readily be seen that the heat which is necessarily created to generate the fluid into gas, must pass the entire length of this continued tubing before coming in contact with the wick tube or screw-cap. The greater part of the heat is thus expelled before reaching the wick tube. But there we cut it off by an opening F of a quarter of an inch between tubing C and H; therefore, the heat being rejected by the chambers, and prevented from entering the lamp, the fluid remains perfectly cool, no vaporization can take place, no explosions follow.



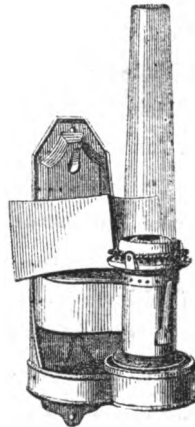
Fountain Car Lamp.
\$30 per dozen.



Candlestick Lantern for Passenger Cars.
1 inch candle, \$40 per dozen.
1½ " " 44 " "
Candles per pound 36 cents.



Springfield Pattern for Passenger Cars.
\$30 per dozen.



Solar Side Lamp for Passenger Cars.
\$20 per dozen.

CAR TRIMMINGS.

Window Lifts, shield pattern.....	per gross.....	\$5 00
“ “ small leaf.....	“	3 50
“ “ large “	“	4 00
“ Buttons.....	“	6 00
Seat Hooks, brass figured.....	per lb	0 46
Pivots, brass, square or round.....	“	0 46
Rivets, “ finished.....	“	0 60
Hat Hooks, brass, small, gilt.....	per doz.....	4 00
“ “ “ large “	“	5 00
“ “ “ enameled.....	“	2 00
Hat Racks or Brackets, brass, new pattern.....	“	10 00
“ “ “ “ “ plain.....	“	5 00
Brass Screw Eyes for Hat Cord.....	“	0 75
Silvered “ “ “ “	“	1 50
Hat Cord, various colors.....	per foot.....	0 03
Malleable Iron Seat Arms.	per lb.	0 10
Head Lining Nails.....	per 100	0 15
Plush Tuft Buttons.....	per gross	0 75
“ “ Nails.....	“	0 87
Enameled Tuft Buttons.....	“	0 50
“ “ Nails.....	“	0 62
Bell Cord Leather.....	per foot..	\$0 05 0 06
“ “ Cotton in colors.....	“	0 05
Best Flax Cord.....	per lb.....	0 20
Thimbles for Bushing.....	per doz.....	3 00
Malleable Iron Thimbles for Bushing.....	“	0 63

Screws, Eyes, and Sculps, light.....	per doz.....	\$1 50
“ “ with pulleys.....	“	3 00
“ “ plain, heavy	“	2 00
“ “ silvered, extra.....	“	0 50
Malleable Iron Eyes with Pulleys,.....	per doz.....	3 50
“ “	“	0 75
“ Iron Bell Cord Couplings.....	“	0 56
Bell Cord Coupling Hooks for Cord or Leather.....	“	2 00
“ Connections for Splicing.....	“	1 50
Car Door Locks, with escutcheons.....	“	9 00
“ brass.....	“	20 00
“ for Saloons.....	“	7 00
“ Rim Locks, common key.....	“	9 00
“ “ bronzed	“	11 00
White's Porcelain Door Knobs, silver metal.....	“	4 00
Light Mineral “	“	3 50
Dark “	“	2 50
Mineral “ japanned	“	1 50
Lamp Canopies, for shielding head lining from smoke..	each	1 00
Tassels, for Window Curtains.....	per doz.....	1 50
Match Lighters, intended to put up near lamps.....	“	3 00
Brass Butts, loose joint, 2½x3.....	“	5 10
“ “ 3x3.....	“	6 00
“ “ 3½x3½	“	9 35
“ “ 4x4.....	“	13 30
Safford's Window Sash Adjuster*.....	“	1 00
Car Window Catches, double action.....	“	2 50
“ “ Page's.....	“	2 00

* See page 110.

Car Window Catches, Robinson's	"	\$2 00
" " " extra silvered.....	"	 0 50
Car Blind Springs.....	"	 0 50
Car Blind Spring Bolts.....	"	 2 00
Cotton Duck for Car Covering, 100 in. wide.....		1 25

Other widths in same proportion.

Cotton Duck for Seats, 16 in. wide.....		0 25
Enamelled Head Linings, embossed, bronzed & flocked, pr sq. yd....		0 87
" " plain.....	"	 0 75
Oilcloth for Floor Carpets, per sq. yd.....		\$1 00 @ 1 25
Matting.....		

Enamelled Cloth.....per yard 0 75 @ 1 00

Enamelled Cloth, grained to imitate wood " " 0 75

Burlaps, per yard.

Buckram, " "

Cotton Felting.

Swedes Iron Tacks, Brads, and Finishing Nails.

Curled Hair, per lb..... 0 28 @ 0 38

Seat Webbing, No. 10, per gross..... 1 50

White Metal, Composition and Brass Letters, for patterns..

Silver Plated " for cars.

Carved Mahogany, and other Wood.....

Veneers—Mahogany, Cherry, Oak, &c., as ordered.

Looking Glasses, made to order.....

Water Coolers, each..... 6 00 @ 8 00

 " Stands..... 5 00

Dust Brushes, Feather, per doz..... 12 00

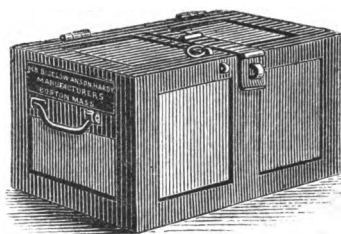
 " Common, " 3 00 @ 5 00

Scrubbing Brushes, " 3 00 @ 5 00

Ventilators, 10 in., each	.....	\$5 50
“ 8 “	.....	4 50
“ 7 “	.....	3 50
“ Rings, 10 in., each	.....	1 50
“ “ 8 “	.....	1 00
“ “ 7 “	.....	0 87
“ “ 6 “	.....	0 75
“ “ 3 “	.....	0 50
“ “ 2½ “	.....	0 45
Car Bitts, per quarter	.....	0 18
Machine Bitts, per quarter	.....	0 25
Brass and Iron Wood Screws—(see pages 112 and 113).		
Black Hair Cloth, 21 inch	 per yard	0 75
“ “ “ 24 “	 “	1 00
Grey Hair Cloth, 24 “	 “	1 25
“ “ “ 21 “	 “	1 00
Carpet for Car Seats, Tapestry	 “	1 00
“ “ “ Velvet	 “	1 25
Plushes, plain and figured, for piece of forty yards, from \$55 to 80 00		
Tufting Twine	 per lb.	0 50
Black Linen Thread	 “	1 00

Notice Plates.

“ Passengers are not Allowed to Stand on the Platform,” each	.....	\$1 50
“ Ladies’ Saloon,” each	.....	1 00
“ For Ladies only,” “	.....	1 00
“ For Gentlemen,” “	.....	1 00



EXPRESS MESSENGERS' SAFES,
WITH BURGLER PROOF LOCKS.

PRICE, 16x16x24 Inches, \$35,

OTHER SIZES AT THE SAME RATE.

Gas Apparatus for Cars,

Embracing the latest improvements—furnished at the lowest rates.

Lamothe's Iron Cars.

All desired information in regard to these Cars furnished on application by letter.

Creamer's Celebrated Brake Operator.

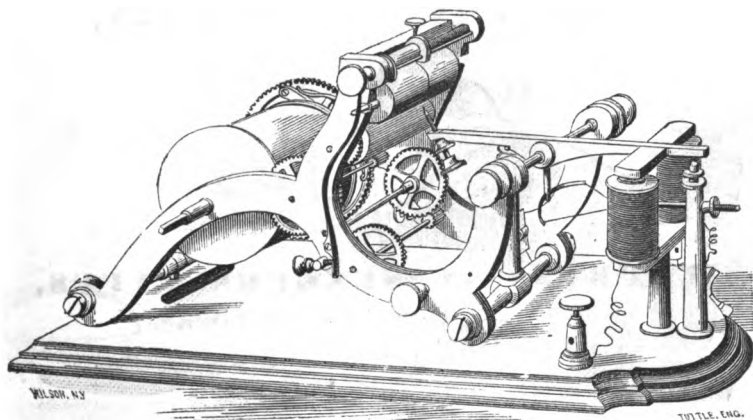
This operator has been thoroughly tested on a large number of roads, and is found to possess all the merit claimed for it. It is reliable, very effective, and places the train under the control of the engineer at all times.

Hotchkiss' Railroad Car-Brake.

This Brake is safer, lighter, cheaper, more convenient and effective, less liable to derangement, and better in all respects than any other.

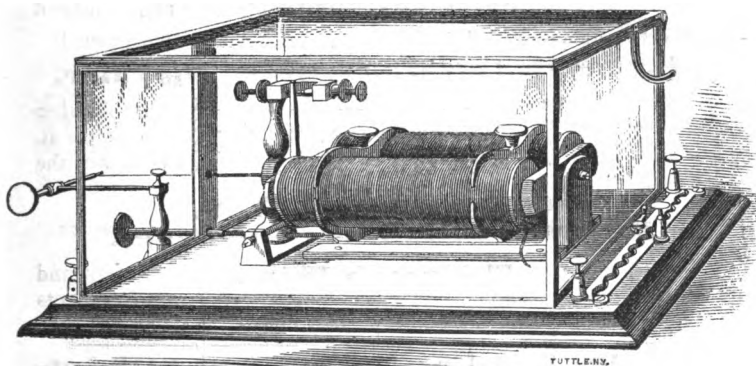
Hopkins and England's Patent Self-Acting Car Coupling.

Enamelled Cast-Iron Hoppers for Water Closets in Cars, &c. This article is far more durable than zinc, tin, or porcelain. Price, \$4 50.



MORSE'S RECORDING REGISTER,

Marble base, extra heavy and fine polish. Price from \$25 to \$40.

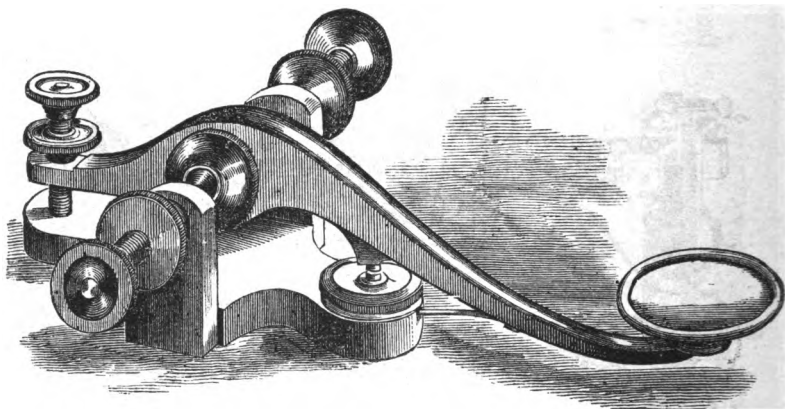


MORSE RECEIVING MAGNET.

Morse's Receiving Magnet from \$10 to \$28.

Pocket, " " " \$10 to \$15.

Receiving Magnet and Bell with key on one base and box for traveling. Price according to size and finish.

MORSE'S MANIPULATING KEY.

Platina Points, Ivory Finger-piece. Secured to table by two binding screw connections—size about one-fourth larger than engraving.

Price, from \$2 50 to \$7.

Telegraph Instrument Wire.

No. 16	cotton covered shellac wire,	\$1 00	per pound.
" 16	English gutta percha,	1 35	"
" 18	" double covered,	1 50	"
" 23	silk covered,	1 75	"
" 26	" "	2 50	"
" 28	" "	2 45	"
" 30	" "	3 00	"

Cotton Covered Wire.

No. 16 & 18 cotton covered wire,.....\$0 75

Telegraph Wire.

No.	Weight per Mile.	Best Proved.	Galvanised.
5	740 lbs.	5½ cts.	7 cts.
6	620 "	5½ "	7 "
7	500 "	5½ "	7½ "
8	400 "	5½ "	7½ "
9	320 "	5½ "	7½ "
10	280 "	6½ "	8 "
11	200 "	6½ "	8½ "

Submarine Wire Cable of all sizes. Wire Rope.

CHESTER'S

PATENT

TELEGRAPH

Battery

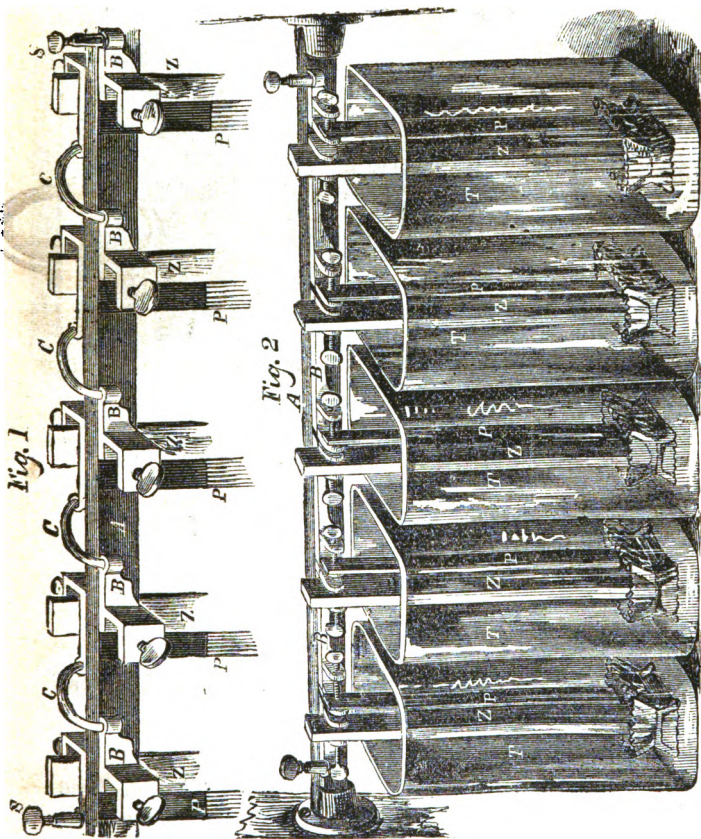
FOR

MAIN

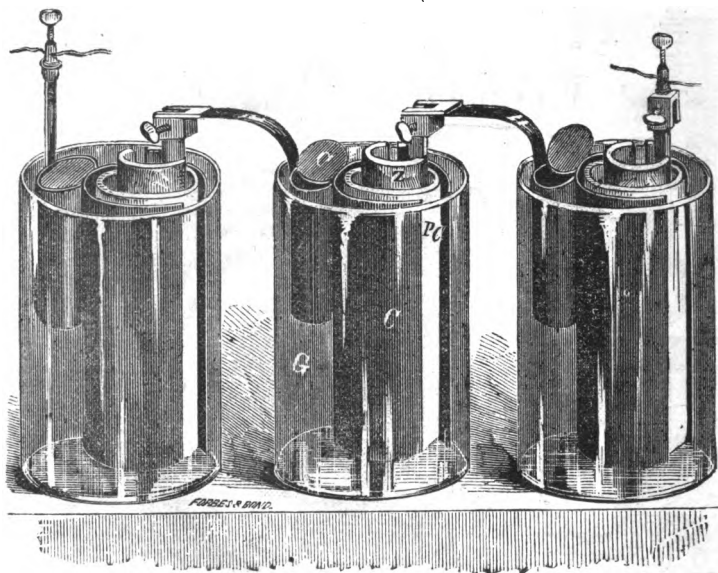
CIRCUIT.

Description.

A, insulated wood-piece, B, brass clamps, Zzink plates, P, platinized plates, T, tumblers. In battery. Fig. 1, the wooden pieces rest upon the glasses. In battery fig. 2d, they rest on iron brackets against supports.



With this Battery no nitric acid is used. Expenses per cup about 10 cents a year. The engraving represents two forms with the least expensive plates. These Batteries have been in extensive use now about five years. Price from \$1 15 to \$1 63 per cell.



CHESTER'S LOCAL BATTERY,

Very large, and capable of sustaining a local current about, three weeks. Price, \$1 75 per cell.

Daniels' Battery, \$1 to \$1 50 " "

Smees' " \$1 to \$10, in great variety, and for all requirements in Electro Metallurgy.

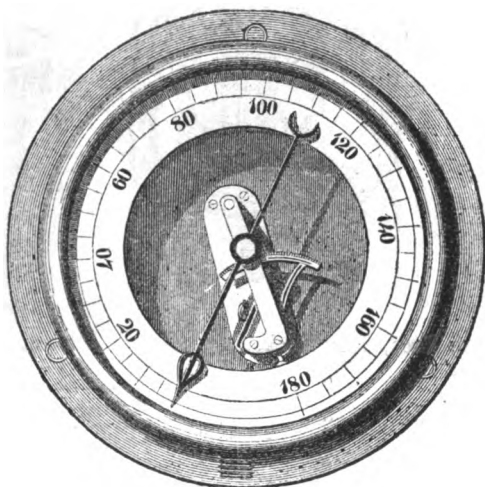
Grove's Battery, \$1 10 to \$1 60 per cell.

Battery Material, as Plates of Zinc, Porous Cups, Tumblers, Platina Strips, Copper Cells. Battery Connections.

Paper, Reel. Acidometers. Galvinometers. Insulators. Quicksilver. Lightning Arresters. Sulphuric and Nitric Acids. Circuit Closers, Cut-offs, Switches.

Binding Screws Connection, &c., &c.

Locomotive Department.



Ashcroft's Steam Gauge.

PRICE LIST.

No. 1.—TEST GAUGE—is of a large size,—dial $8\frac{1}{2}$ inches diameter, graduated with 1 lb. marks up to 240 lbs. pressure, and finished in the best possible manner. The pump is simple in its construction, and furnished with all the apparatus necessary in testing Gauges. Both the Pump and the Test Gauge, are WARRANTED TO GIVE ENTIRE SATISFACTION.

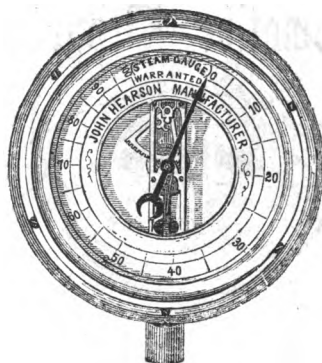
PRICE OF TEST GAUGE, \$50. FORCE PUMP, \$30.

No. 3.—Brass Case, High Pressure, Low Pressure, or Vacuum,— $6\frac{1}{2}$ inch open dial,—\$25.

No. 6.—New Pattern Locomotive, Iron Case, Brass Ring, $6\frac{1}{2}$ inch solid dial,—\$20.

No. 8.—New Pattern, small size, Iron Case, Brass Ring, $5\frac{1}{2}$ inch dial, for Marine and Stationary Engines,—\$15.

No. 9.—Light Brass Case, $5\frac{1}{2}$ inch close dial, registering from 4 to 20 lbs., (in $\frac{1}{2}$ and $\frac{1}{4}$ lbs.) intended for Blast Furnaces; to show the amount of back pressure upon Steam Engines, where heating apparatus are used; and also for proving Gas Pipes—\$15.

HEARSON'S STEAM GAUGE.

5 inch	Open Face,	Iron Back,	.....	\$16,00
6½ "	Solid	" "	.....	15,00
6½ "	Open	" "	.....	18,00
8 "	"	" "	.....	20,00

With Cock, \$1 50 each extra.

**Water [Guages for High or Low Pressure
Boilers.**

No. 1,	11 in. tube	.....	\$13
2,	13 "	.....	16
3,	15 "	.....	18
4,	18 "	.....	20

These Guages are very extensively used, and are warranted to give perfect satisfaction, or they may be returned at our Cost.

SCHMIDT'S STEAM GAUGE.

6 inch, Solid Face, Brass Back.....	\$14 00
6 " Open " "	15 00
7 " " " "	16 00
9 " " " "	20 00

Allens' Steam Gauge.**LIST OF PRICES:**

No. 0, Brass Case, 5 inch.....	\$15 00
" 1, Brass " brass ring and bottom, 5 $\frac{1}{2}$ inch.....	20 00
" 2, Iron " " " " 6 $\frac{1}{2}$ "	18 00
" 2, Brass " " " " 6 $\frac{1}{2}$ "	25 00
" 3, " " " " " 7 $\frac{1}{2}$ "	30 00

Mercury Steam Gauge

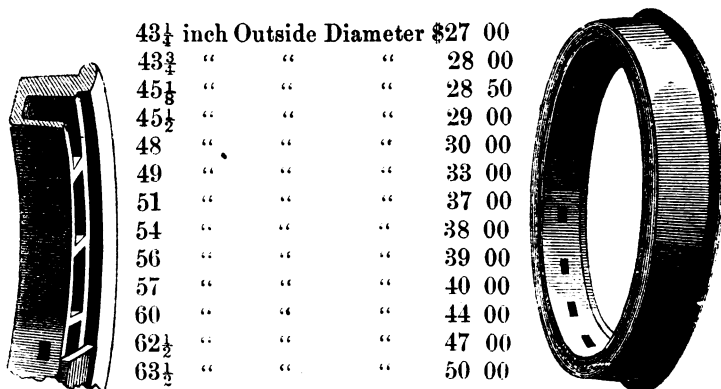
A very superior article, price \$20 00 complete.

Kayser & Hoffman's

Improved Steam Gauge, and a variety of others of the most perfect design.

H. W. Moore's Patent Chilled Locomotive Tires

Patented April 26th, 1859.



43 $\frac{1}{4}$ inch	Outside Diameter	\$27 00
43 $\frac{3}{4}$ "	"	28 00
45 $\frac{1}{8}$ "	"	28 50
45 $\frac{1}{2}$ "	"	29 00
48 "	"	30 00
49 "	"	33 00
51 "	"	37 00
54 "	"	38 00
56 "	"	39 00
57 "	"	40 00
60 "	"	44 00
62 $\frac{1}{2}$ "	"	47 00
63 $\frac{1}{2}$ "	"	50 00

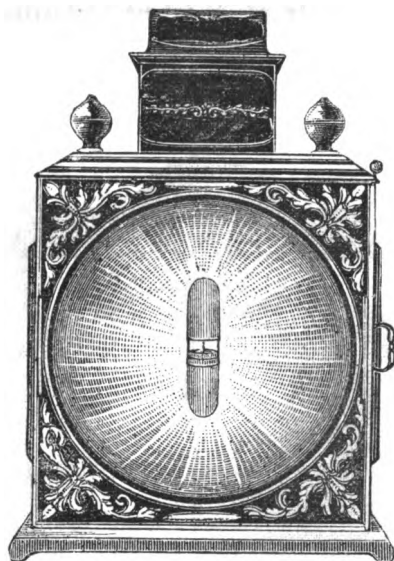
I beg leave to call your attention to the improved method of making these Tires.

The advantages are, the **HOLLOW TIRES** are light, being about the weight of wrought iron; a **DEEP EVEN CHILL**, and they are equally as strong as the **SOLID TIRES**.

In making Tires by the old method, such **HARD, HIGH, CHILLING** iron had to be used, that a great deal of the strength of the iron was lost, iron that would show an inch chill in a **CAR WHEEL**, would hardly show a streak of chill in a **SOLID TIRE**. The method of making them hollow, and thus divide the large body of iron running against the mould, affords a **DEEP RELIABLE CHILL** from a very much softer iron, thereby giving increased strength to the Tire and overcoming the great objection to their weight.

The use of **Chill Tires** on our Railroads, has had great opposition to overcome from a prejudice so prevalent among a portion of our Railroads, that **CHILL TIRE** would slip, and an engine would haul but a small load compared with one with **Wrought Tires**; this idea has become almost obsolete with such roads as the Baltimore and Ohio, Illinois Central and many other of the largest roads in the country, who have had large experience with **Chilled Tires** for years; they say the difference is so small, that it is no objection to their use.

Also, **LOWMOORE, BOWLING, AMES and FARNLEY TIRES**, at the lowest market prices

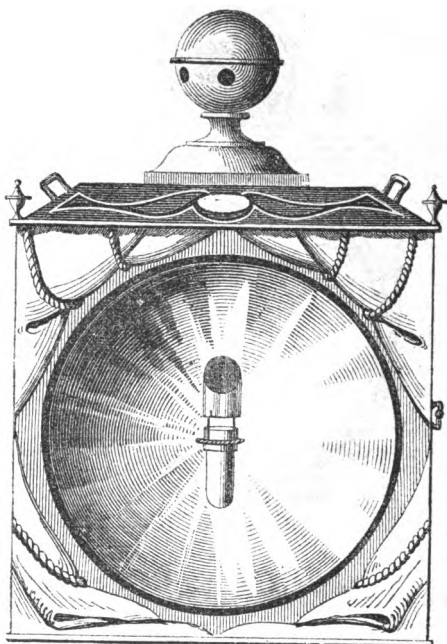


KELLY & CO.'S

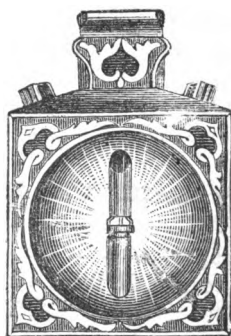
21 inch Reflector,.....	\$65 00
22 " " 	70 00
23 " " 	75 00
24 " " 	80 00

This Lamp is warranted superior to any extant, and if upon trial it does not prove so, all expenses consequent upon its return will be paid by me.

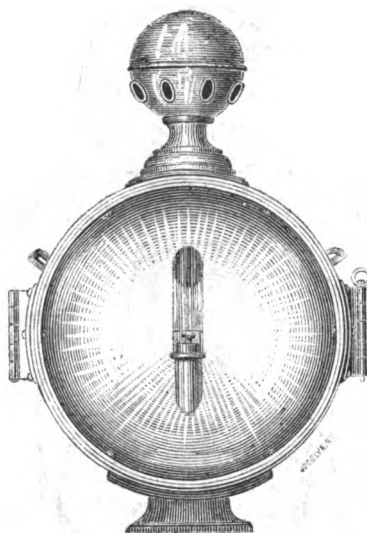
Head-Light Chimneys, per doz.....	\$1 50
Chamois Skins, per doz.....	8 00
Polishing Powder, per paper.....	0 12
Head-Light Glasses, cut to size, 20 inch.....	2 00
" " " 23 " 	2 50

P O R T E R ' S .**P R I C E :**

18 inch Reflector,	\$55 00
22 " "	65 00

W I L L I A M S ' .**P R I C E :**

20 inch Reflector,	\$75 00
23 " "	90 00



Improved Locomotive Head Light.

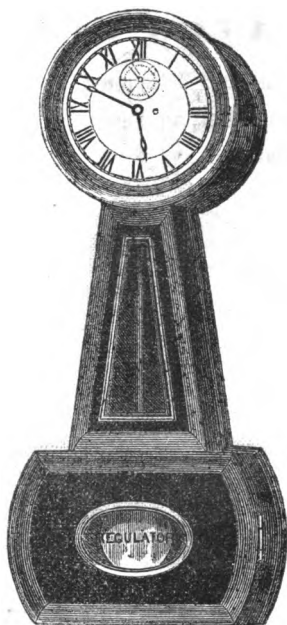
I would invite particular attention to the IMPROVED HEAD LIGHT, as illustrated by the above cut. It will be observed that it is more symmetrical, and in keeping with the general style of the Engine.

LIST OF PRICES:

22 inch Reflector,	.....	\$75 00
20 " "	.....	60 00
18 " "	.....	55 00

RADLEY & HUNTER'S.

18 inch Reflector,	.....	\$70 00
20 " "	.....	80 00
22 " "	.....	90 00



CLOCKS,

For Railroad Depots, Banks, and Public Offices.

The above cut represents our Railroad Regulator. It has a 12 inch dial, full length pendulum, seconds-dial, dead-beat escapement and maintaining power. It is very nearly compensated change of temperature, and will keep very accurate time. It is particularly adapted for Banks, Railroad Depots, Insurance Offices, and large rooms. The case is of stained rosewood, varnished and polished. Its length is 4 feet 2 inches. Price, \$50.

Clocks of the above style for small offices, &c, from \$12 to \$25.

MARINE AND LOCOMOTIVE CLOCK.

We are now manufacturing a clock for vessel and Locomotive use which is intended to supply a want not yet provided with an accurate and reliable timekeeper.

This clock has a dial of 7 inches, the case of finished cast brass, either lacquered or bronzed to suit the taste.

The movement is in every respect first quality; the Escapement and Balance jewelled, and the entire arrangement of train is calculated to produce correct time, while securing simplicity and durability. We invite the attention of the Trade to the introduction of this new Clock to the Marine and Railroad patronage. **Price \$30.**

WATCH CLOCK,

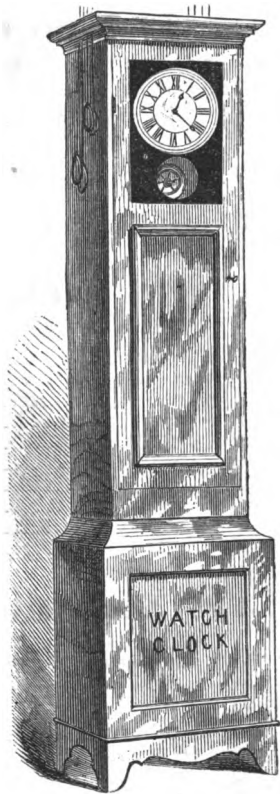
For the Detection of Delinquent Watchmen on Night Duty in Factories, Railroad Stations, and Public Buildings.

The Watch Clock is used in all Manufactories, Railroad Stations, Lumber Yards, and all places where Watchmen are kept during the Night.

The Clock has a Time Dial, independent of the Pin Dial, which serves as a good regulator for time for the whole establishment; and the pins are so arranged that they cannot be driven even by opening the clock case, except by the regular pulls.

The Clock should be placed in a room convenient for the exhibition of time; and cords and pullies run from it to such rooms on the premises as you wish the watchman to visit each **HALF HOUR** of the night. Care should be taken that the termination of the wires should be in such places as to cause the watchman to explore as much of the premises as possible. It is necessary to visit all the rooms designed, in order to drive **ONE PIN**. The Clock is so constructed, that fifteen or twenty minutes, (according to the number of rooms that have to be visited) is allowed the Watchman to go over the building. With this Clock, the Watchman cannot fail in his duty without detection.

In ordering a Clock, please state the number of rooms, or points, you wish the Watchman to visit each half hour of the Night.



PRICES.

One Clock, with Levers, for one Room.....	\$40 00
" " " " " two Rooms.....	45 00
" " " " " three ".....	50 00
" " " " " four ".....	55 00
" " " " " five ".....	60 00
" " " " " six ".....	65 00
" " " " " seven ".....	70 00
" " " " " eight ".....	75 00

RUBBER HOSE,

In lengths of fifty feet.

2 Ply Conducting Hose.

For light Conducting purposes, and will not be warranted, if under pressure.

1 in. diameter.....	22 cents per foot.
1½ "	25 " "
1¾ "	28 " "
1½ "	33 " "
2 "	37 " "
2½ "	43 " "
2¾ "	50 " "
2½ "	58 " "
3 "	65 " "

3 Ply Hydrant Hose.

Warranted to stand a pressure of 75 lbs. per square inch.

¾ in. diameter.....	22 cents per foot.
7/8 "	23 " "
1 "	27 " "
1¼ "	30 " "
1½ "	33 " "
1¾ "	40 " "
2 "	45 " "
2½ "	50 " "
2¾ "	55 " "
2½ "	63 " "
3 "	70 " "

4 Ply Locomotive and Fire Engine Hose.

Warranted to stand a pressure of 175 lbs. per square inch.

2 "	55 cents per foot.
2½ "	60 " "
2¾ "	65 " "
2½ "	70 " "
3 "	75 " "
3½ "	82 " "
3¾ "	90 " "
4 "	110 " "

Hemp Hose,

In lengths of 100 feet, warranted to stand 75 pounds pressure, is fully equal to rubber at less cost.

P R I C E.

1 inch.....	16 cents.	1½ inch.....	20 cents.	1¾ inch.....	22 cents
2 "	30 " "	2¼ "	37 " "	2½ "	46 " "
3 inch.....	56 cents.	4 inch.....	75 cents.		

SALTER'S ENGLISH LOCOMOTIVE BALANCE.



This is the genuine imported Balance, such as was used in this country on the first Locomotives built, and, as all are aware who have some of the old left, are very much superior to those made in this country.

The new pattern, as shown in the accompanying cut, will be found particularly desirable, the scale being on the inside cylinder, and the "pointer" dispensed with.

Price, \$9.

BOILER FLUES, COPPER AND BRASS.

ALSO, .

English and American Patent Lap Weld Iron Flues.

Particular attention paid to the selection of
BOILER IRON, for FIRE BOXES, &c.

Radley & Hunter's Celebrated Spark Arrester,
At the manufacturers' lowest price.

ALSO,

WIRE NETTING.

Twilled, per foot,	25 cts.
Plain, "	18 "

PACKING YARN.

Italian Hemp Packing.....	per lb..	20
Russian “.....	“ ..	18
Cotton “.....	“ ..	25
Flax (superior) Packing.....	“ ..	25

STEAM PACKING.

Fibrous Packing.....	per lb..	\$0 40
Gum “.....	“ ..	0 50
Gaskets, all sizes.....	“ ..	0 65
Valves and Tubes, Patent Padding.....	“ ..	0 75
Fire Buckets, Rubber.....	per doz..	21 00
“ “ (Leather).....	“ ..	42 00
Bunting, for Flags.....	per yd..	0 25
Torpedoes or Fog Signals,.....	per doz..	1 50

LOCOMOTIVE NAME PLATES,

All complete, ready to fasten on to the Engines—for large letters, $3\frac{1}{8}$ inch diameter, all capitals, viz. : SOUTHERN,

5 letters or under.....		\$7 25
6 “ “.....		8 25
7 “ “.....		9 25
8 “ “.....		10 25
No. and 1 Figure.....		8 00
“ 2 “.....		9 00
“ 3 “.....		10 00
Small letters $2\frac{1}{8}$ in. diameter, beginning with Capitals, viz., SOUTHERN,		
5 letters or under.....		\$7 00
6 “ “.....		8 00
7 “ “.....		9 00
8 “ “.....		10 00
No. and 1 Figure.....		5 00
“ 2 “.....		6 50
“ 3 “.....		7 75

BRASS WORK.**Oil Cups with Stop Cocks.**

Globe, 2½ in. diam, per doz., No. 831.....	\$35 00
“ 2 “ “ 830.....	25 00
“ 1¾ “ “ 828.....	18 00
“ 1½ “ “ 827.....	16 00

Plain Oil Cups without Cocks.

Globe, 2½ in. diam., per doz. No. 836½.....	\$21 00
“ 2 “ “ 836.....	15 50
“ 1¾ “ “ 835.....	11 00
“ 1½ “ “ 834.....	8 00

Copper Cistern Pumps.

Complete, with fastenings, 2½ inch chamber, each.....\$6 50

Cocks.

Steam Pet Cocks, per doz.....\$13 50

Cylinder Cocks, No. 1, per doz..... 15 00

The Plug of these Cocks have a bearing of 2¼ inches.

Guage Cocks, per doz., M. & C..... 20 00

Compression Guage Cocks, per doz., No. 31.....\$17 00

Steam Whistles.

3 inch diameter.....\$9 50

4 “ “ 12 50

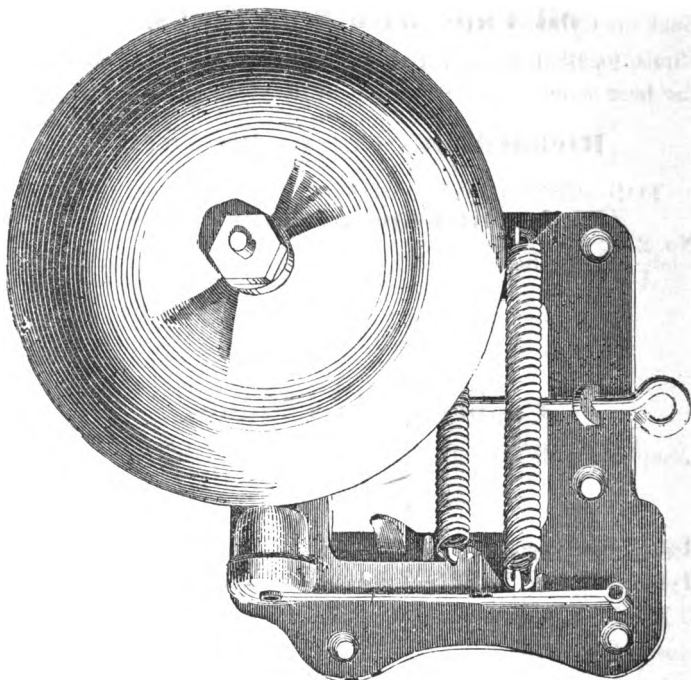
5 “ “ 16 00

6 “ “ 22 00

Without Valves, \$2 less each.

Railing Balls (round), per doz.....\$6 50

“ “ (acorn pattern), per doz..... 10 50

LOCOMOTIVE GONG BELLS.

\$2 50	\$3 00	\$3 50	\$4 50	\$5 50 each.
6	7	8	9	10 inches.

Depot Bells.

15 inches.....	\$15	18 inches.....	\$18
25 "	40	(extra heavy.)	

Locomotive Bells.

Turned and Polished, per pound.....40 cents.

SHEET BRASS WORK,

Such as Cylinder and Dome Laging, Boiler Bands, Escape Pipes, together with every variety of spun work, executed in the best manner at the lowest prices.

Richardson's Patent Oil Cups,

FOR CROSSHEADS, CONNECTING RODS, ETC.

No. 2—2 inch diameter, per dozen	\$16
“ 1—1 $\frac{3}{8}$ “ “ “	11

Patent Oil Cans,

FOR LOCOMOTIVES, WITH VALVE.

B R A S S .

1 Pint, per dozen	\$30
1 Quart, “	40
3 Pints, “	45

T I N .

1 Pint, per dozen	\$20
1 Quart, “	28
3 Pints, “	30

FANCY OIL CANS,

SPRING BOTTOMS.

Copper and Brass, per dozen, 3 $\frac{1}{2}$ inches diam	\$3 00
Zinc and Tin, “ “	2 25

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